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VENEREAL MEMORANDA

A MANUAL

FOR THE

STUDENT AND PRACTITIONER

BY

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PREFACE.

THE author has aimed to give in this little volume a concise exposition of the nature and treatment of Venereal Diseases. With this object in view, he has endeavored to "boil down," so to speak, the material embodied in more voluminous works on Venereal, and present the essential facts and principles in the most compact form possible, consistent with clearness. The scope of the work is, therefore, more comprehensive than is usual in books of this class.

In the effort to condense so much important material within necessarily narrow limits the sententious style of expression adopted naturally assumed the form of Aphorisms.

It may be a question whether our knowledge of venereal diseases is sufficiently accurate and thorough to admit of its aphorismic expression. While there are still moot

points relating to the possible bacterian origin of these diseases, certain phases of syphilitic heredity, the pathological relationships of syphilis with other diseases, etc., yet these possess a theoretical, rather than a clinical significance; they in no wise affect the principles of treatment. Upon all important essential points, the teachings of science are fixed and definite.

With the object of making the book as practical as possible, histological details and references to pathological anatomy have been omitted. To meet the wants of the general practitioner, a full formulary and detailed directions for treatment have been added. While the endeavor has been made to bring the therapeutical portion of the work fully up to the latest advances made in this department, new remedies and methods of treatment have been introduced with discrimination, and only such recommended as have been subjected to the test of sufficient clinical experience.

66 West 40th St.,
October 1, 1885.

PREFACE TO THE SECOND EDITION.

The issue of a second edition of this "Manual," which was called for several months ago, has been delayed from lack of time on the part of the author to make such changes and additions as would reflect the latest advances made in our knowledge of venereal diseases and bring the book fully up to date.

Modern bacteriological researches have materially amplified our conception of the important pathogenetic rôle played by micro-organisms in the production of syphilis and chancroid as well as of gonorrhœa. Full recognition has been given to modern microbian theories in connection with the etiology of these diseases.

The additions which have been made in the department of therapeutics will, it is hoped, add materially to the practical value of the work.

The author's acknowledgments are due to Dr. J. C. Johnston for valuable assistance in the preparation of the new matter and in correcting the proofs.

66 W. 40TH STREET,
October 1st, 1893.

INTRODUCTION.

UNDER the general class of "Venereal Diseases" are comprehended three distinct affections—GONORRHŒA, CHANCROID, and SYPHILIS.

They are termed *venereal* because they are commonly contracted during the venereal act, and have for their usual seat, or point of departure, the genital parts.

They each generate a fixed contagium, capable of causing in other individuals a disease identical with that from which it was derived.

While possessing these characters in common, they are essentially distinct in their origin and nature, each exhibiting a well-marked individuality.

Gonorrhœa and chancroid are purely local diseases; they never affect the general system. Syphilis is a general disease, perme-

ating the entire organism, and susceptible of hereditary transmission.

Syphilis occurs but once in the same individual; chancroid may occur an indefinite number of times, while one attack of gonorrhœa increases the susceptibility to succeeding attacks.

Gonorrhœa may originate from other causes than contagion; chancroid may exceptionally be generated *de novo* from the pus of common inflammation; syphilis is invariably the product of a specific virus.

Gonorrhœa and chancroid have no stage of incubation properly so called, the inflammatory process begins immediately upon application of the exciting cause; syphilis, like other specific diseases, has a constant, well-marked period of incubation.

In gonorrhœa, the inflammatory process is limited to the mucous tract in which it orginated, and its complications involve the neighboring structures.

Chancroid is a local ulceration, the range of its morbid action is confined to the narrow lymphatic circle which surrounds its point of origin.

Syphilis is essentially a constitutional disease; the field of its pathological phenomena is extended, and embraces every constituent element of the body.

The duration of gonorrhœa and chancroid is limited. Syphilis is practically indefinite in its duration.

Gonorrhœa and chancroid are rarely the cause of death, except indirectly from neglected complications. Syphilis is a frequent cause of death, especially in the extremes of life.

Syphilis is the least venereal of all venereal diseases; it often originates independent of the venereal act; the seat of its primary lesion may be remote from the genital sphere; its morbid manifestations are diffused over the entire body.

Chancroid is the venereal disease *par excellence;* it is nearly always propagated by impure sexual contact, and its almost exclusive seat is the genital or neighboring parts.

Gonorrhœa, in point of frequency, occupies the front rank. It represents fully one-half of all cases of venereal disease.

The relative frequency of chancroid and syphilis varies at different times and under different conditions—material, moral, and sanitary.

Statistics of our large centres of population show a progressive diminution of the frequency of chancroid as compared with syphilis within the last few decades.

Syphilis has diminished in intensity, while it has increased in frequency. It is a much milder disease than formerly.

PART I.

GONORRHŒA AND ITS COMPLICATIONS.

CHAPTER I.

NATURE AND CAUSES OF GONORRHŒA.

GONORRHŒA may be defined as an inflammation peculiar to certain mucous membranes, attended with the production of a purulent or muco-purulent discharge.

This discharge has the property of exciting a similar inflammation when brought in contact with other mucous surfaces susceptible to its action.

The urethral mucous membrane in the male, and the mucous membranes of the urethra and vagina in the female, are ordinarily the seat of gonorrhœal inflammation.

Other mucous membranes, the conjunctival, the vesical, the uterine, the balano-

preputial, the rectal, the nasal, and perhaps the buccal, are also susceptible to the irritant action of gonorrhœal pus.

Of all mucous membranes of the body, the urethral and conjunctival manifest the highest degree of susceptibility to this irritant action.

This morbid aptitude is especially marked in relation to the conjunctiva; a single drop of muco-pus transferred from the urethra to the eye will promptly produce purulent conjunctivitis.

Gonorrhœal inflammation of the genital mucous membranes is more frequent than that of the conjunctival only because these surfaces are more frequently brought into inoculative contact.

Since, in the immense majority of cases, the urethra is the seat of gonorrhœal inflammation, the term *urethritis* is preferable, as more correctly indicating the nature and seat of the morbid process.

The contagious principle of gonorrhœa resides in the purulent portion of the secretion, the other elements possessing no contagious activity.

Experiment has proven that, if the discharge be filtered and the pus-globules carefully separated, the latter alone are contagious, while clinical observation has shown that, when the discharge no longer contains pus, it ceases to be contagious.

Gonorrhœal pus, when diluted or dried, may retain for a time its contagious quality; there may thus be a *mediate* contagion by transference of the pus with the fingers, towels, instruments, etc.

Recent observers have discovered in the pus of gonorrhœa certain minute organisms termed *gonococci*, or the diplococci of Neisser, to the presence of which the disease is due. These organisms consist of double cocci, usually contained in the substance of the leucocytes present, and easily demonstrable, by proper staining methods, under the microscope.

They have been cultivated outside the body, inoculated into a healthy urethra, and produced a typical gonorrhœa.

The gonococcus has been found in the secretions of the urethra, vagina, uterus, conjunctiva, rectum, mouth, and nose—in

fact, of all mucous surfaces susceptible to gonorrhœal infection. In rare instances it has been found in bartholinitis, pyosalpinx, peri-urethral abscess, peri-urethral folliculitis, as well as in joint affections.

It has not yet been determined whether these complications are due to the gonococcus alone or to other pyogenic microbes or mixed infections.

Several species of diplococci almost identical, morphologically, with the gonococci, are sometimes found in urethritis artificially developed, in other mucous inflammations from accidental causes, sometimes even in the normal urethra ; but, according to Neisser, in skilled hands, with the differential methods now in use, there is little possibility of a mistake.

It is to be noted that other careful and competent observers have failed to find these microbes in the pus of gonorrhœa.

These failures are ascribed to faulty procedures, to lack of persistence in making the search, and to the fact that, toward the termination of the disease, the gonococci

may disappear almost entirely from the secretion.

The pathogenetic agency of the gonococcus in the production of gonorrhœa may therefore be accepted as established on a firm basis. The presence or absence of Neisser's diplococcus, demonstrated under the microscope, serves to differentiate it from simple urethritis.

From a clinical standpoint, however, a distinction between *virulent* and *non-virulent*, *specific* and *non-specific*, *contagious* and *non-contagious* urethritis is impossible.

A multiplicity of simple causes may produce a urethritis, indistinguishable in intensity of symptoms, duration, and contagious quality of discharge from urethritis derived from the most unquestionable gonorrhœal pus.

This simple urethritis or "bastard gonorrhœa," as it has been termed, is to be differentiated from true gonorrhœa only by microscopical examination of the discharge which contains no gonococci.

The menstrual discharge, leucorrhœa, secretions from ulcerations of the cervix and

os uteri, from simple excoriations—in fact all utero-vaginal secretions of an irritating character may excite inflammation of the healthy urethra.

A urethritis thus engendered is often characterized by prolonged duration, persistence, and obstinacy to treatment.

A prolific cause of simple urethritis in men is too frequent repetition of the sexual act with women who are affected with leucorrhœa or uterine catarrh.

A leucorrhœa which would have remained innocuous after a single coitus, takes on irritant properties under the influence of repeated intercourse, developing a potentiality for mischief which it did not before possess.

Frequent repetition of the venereal act heightens the susceptibility of the male. The prolonged erethism causes a hyperæmia of the urethral mucous membrane, and disposes it to more readily take on inflammatory action.

The enervation which follows frequently repeated coitus robs the mucous membrane of its resisting power to irritant influences.

Habituation is an important factor from an etiological point of view. A woman may prove innocuous to a man with whom she has habitual relations, yet infect other men upon whom she bestows unaccustomed favors.

The theory of "acclimatization" explains the comparative immunity of husbands from the leucorrhœal discharges of their wives.

Every mechanical and chemical agency capable of determining irritation of the urethra may produce urethritis of a severe type.

Strong injections, catheterism, the passage of a stone, violent exercise, etc., may be enumerated as exciting causes of urethritis.

Sexual excess, over-indulgence in wine, intense erotic excitement, it may be without gratification, the use of certain articles of food, certain medicaments, may act as exciting causes, although they most commonly belong to the category of predisposing or adjuvant causes.

The existence of stricture, a damaged condition of the urethra from antecedent

disease, granular spots, etc., predispose to urethritis.

One attack of urethritis seems to establish a predisposition to a second; and the more numerous the attacks the more readily the disease is contracted anew.

Certain diathetic states, such as the gouty, the rheumatic, the scrofulous, predispose to urethral inflammation.

Individual predisposition plays an important rôle in the development of urethritis—a number of men may have intercourse with a woman suffering from gonorrhœa; one may contract the disease, while the others escape.

Certain physical conditions, such as a long and narrow prepuce, a wide urethral orifice, hypospadias, etc., favor the acquirement of gonorrhœa.

Temperament and race exert a marked influence as predisposing causes. Blondes are more susceptible than brunettes.

The negro race is comparatively exempt from liability. Considering the combined influence of lust and dirt which surround

their sexual relations, negroes enjoy a remarkable immunity.

The secretions of infantile leucorrhœa, of purulent conjunctivitis, and other morbid discharges, are capable of engendering a violent inflammation of the urethra.

Clinical observation, as well as direct experiment, prove the identical interchangeable nature of urethral and conjunctival inflammation.

Pus from the urethra applied to the eye will produce purulent conjunctivitis; pus from conjunctivits introduced into the urethra will develop urethritis.

Urethritis, from whatever cause produced, is characterized by the same pathological process, and is revealed by the same order of symptoms.

Differences in the intensity and duration of the symptoms are to be referred partly to the character of the exciting cause, and partly, perhaps chiefly, to individual peculiarities, such as weakness, relaxation of the mucous membrane, antecedent disease, etc.

The secretion of an actively inflamed mu-

cous surface is richer in pus globules, and therefore more irritating, than a muco-pus produced by an inflammatory process of a lower grade of intensity.

The pus derived from an active gonorrhœa is, therefore, more irritating and contagious than the altered physiological secretions from the female genitals.

Treatment, diet, drinks, habits, etc., exercise an important influence upon the grade of inflammatory action. A urethritis, primarily mild, may be intensified in severity by strong injections, excess in venery, drink, improper diet, etc.

The same relative differences in symptoms as regards intensity, duration, and other characters, are observed in other catarrhal inflammations, as coryza, laryngitis, bronchitis, etc.

The etiological question involved in the determination of the *specific* or *non-specific* nature of gonorrhœa has an important bear- from a medico-legal point of view.

Divorces have been sought for and obtained upon the deceptive evidence of a

urethral discharge, the existence of which has been accepted as a convincing proof of impure intercourse.

The existence of a urethral discharge, no matter how profuse, how purulent, how "gonorrhœal" it may appear, does not afford proof positive that it must have originated from a recent gonorrhœal source.

Even when gonococci are found in the secretion, it must be remembered that it may be due to a lighting-up of a long-dormant process, the contagious elements of a former infection being roused into activity by some of the above enumerated causes.

The assumption that every purulent, contagious discharge from the genital mucous membranes must have been derived from a pre-existing gonorrhœa may cast suspicion upon the chastest of wives—may wrongly accuse the most faithful of husbands.

The existence of a purulent discharge from the vulva of children has often led to the unjust accusation and punishment of innocent persons for attempted violation.

CHAPTER II.

SYMPTOMS OF GONORRHŒA.

BETWEEN the time of exposure to the contagion of gonorrhœa and the first appearance of the discharge, there is usually an interval varying from a few hours to several days.

Gonorrhœa has no well-defined stage of incubation, no more than characterizes other catarrhal inflammations—between wetting the feet, for example, and the appearance of a coryza or a bronchial inflammation.

The morbid process probably begins immediately upon the application of the exciting cause, the pathological result—the discharge—appearing later.

The celerity with which irritative effects are developed depends partly upon the activity of the contagious secretion, its concentration, its richness in pus-corpuscles,

and partly upon susceptibility of the tissues.

A drop of pus which, introduced into the urethra, may require two or three days to develop suppurative symptoms, will, when applied to the conjunctiva, develop such effect in a few hours.

The interval between the time of exposure and the first appearance of the characteristic symptom affords no correct criterion as to the duration and severity of the affection.

Gonorrhœal inflammation begins at the orifice of the urethra, and extends from without inward to the deeper urethra by continuity of structure.

Ordinarily the inflammation is confined to the anterior portion of the urethral canal, first limited to the fossa navicularis, and rarely extending farther than three or four inches.

Later it may involve the urethral mucous membrane in its entire extent, or be restricted to isolated patches.

The first subjective symptom of gonor-

rhœa is usually an itching at the urethral orifice, soon followed by a sense of smarting and burning, especially during the passage of urine.

These painful sensations vary in degree in different individuals, and do not always bear a definite relation to the intensity of the inflammation, or the profuseness of the discharge.

The physical signs of urethritis consist first in swelling and pouting of the lips of the urethra, redness and œdema of the glans, while later the entire organ becomes swollen and sensitive to pressure.

The discharge first appears in the form of a thin, transparent mucoid secretion, or a milky white fluid, which glues the lips of the urethra together.

As the disease progresses, the discharge becomes thicker, more abundant, frankly-purulent, of a creamy consistence, and of a yellowish or greenish-yellow color.

The inflammatory symptoms increase in severity and usually attain their height at the beginning of the second week, urination becomes more frequent and painful, the

stream of urine small, forked, and twisted, with painful erections and chordee.

The calibre of the canal may be so encroached upon by the swelling that there may be difficulty in emptying the bladder; sometimes there may be complete retention, necessitating the use of hot baths or the catheter.

The term *chordee* is applied to the bending of the penis during erection, the concavity of the curve being directed downward, sometimes laterally.

This condition is the result of an effusion of plastic lymph in the meshes of the spongy tissue surrounding the corpus spongiosum, and preventing the influx of blood into the erectile tissues of this body.

The mechanism of chordee is explained by the fact that the inextensible corpus spongiosum does not participate in the erection, but draws upon the expanding corpora cavernosa like the string of a bow.

Painful erections occur most frequently at night, and are most common during the second and third weeks of the urethral inflammation.

The period of decline of gonorrhœa is marked by the cessation of pain, the subsidence of the inflammatory symptoms, and the gradual diminution of the quantity of the secretion.

The discharge becomes changed in character, less purulent, less abundant, passing through a stage of progressive diminution until it ceases as it began, in a thin mucoid secretion.

Its cessation is rarely sudden and complete; it usually passes through a stage of partial subsidence and recrudescence, disappearing one day and reappearing the next, until it ceases altogether.

Instead of disappearing altogether, it may lapse into a chronic discharge which continues indefinitely for weeks, months, or years.

CHAPTER III.

PROPHYLAXIS AND TREATMENT OF GONORRHŒA.

PROPHYLAXIS.—There is no medicinal preservative against the irritant action of gonorrhœal pus when brought in contact with a mucous membrane susceptible to its influence.

Ablutions, the use of astringent injections immediately after copulation, etc., while possibly diminishing the chances of contagion, afford no absolute security.

The condom is the most efficient protective, but this is liable to prove deceptive, verifying the appellation of Ricord, "a cuirass against pleasure, a cobweb against danger."

Urination immediately after completion of the act is a time-honored precaution

A prostitute is safer at night than in the

morning, when contagious secretions have had time to accumulate.

Cleanliness on the part of the prostitute confers the surest guarantee against contagion, justifying the French proverb, "*Venus sortant de l'onde a rarement donné la chaudepisse.*"

The man who exposes himself to a possible source of contagion should not linger long in the lap of Venus. "*Cito tuto et etc.*" is a safe motto.

Intercourse during the menstrual period is an infraction of nature's law; the violation of which often carries its own punishment with it.

The so-called police regulations of houses of prostitution, as a prophylactic measure against the spread of veneral diseases, have proven, in this country, practically a failure.

TREATMENT.—*There is no specific for the cure of gonorrhœa.* Various drugs and combinations have been recommended from time to time as possessing specific properties, but their claims have not been justified by clinical experience.

Gonorrhœa is essentially a self-limited disease, with a tendency to spontaneous recovery in about four weeks, provided all causes of irritation are removed.

The correct principles of rational treatment are to subdue the inflammation and alleviate the symptoms which it occasions.

The use of strong astringent and caustic injections are recommended by many authorities in the early stage, with the view of aborting or cutting short the inflammation.

The *abortive treatment* of gonorrhœa is condemned by its clinical results, which are almost invariably failures.

Caustic injections not infrequently cause a deep-seated phlegmonous inflammation of the urethra, favor the tendency to complications, and determine the production of stricture.

The *antiphlogistic* plan of treatment by blood-letting, blistering, and tartar emetic, reducing the system by powerful purgatives and diuretics, low diet, etc., is now fortunately obsolete.

The essentials of intelligent treatment may be summed up as follows: suitable hygienic measures, rest, cleanliness, and the relief of painful or distressing symptoms.

Hygienic measures have reference to regularity of the bowels, diet, the avoidance of highly seasoned or salty articles of food, of sauces and condiments, strong tea or coffee, and alcoholic stimulants of all kinds.

Rest includes not only repose of the body, preferably in a horizontal position, but also freedom from movement, friction, or irritation of the genital parts.

A well-fitting suspensory bandage should be worn for the purpose of supporting the genital organs, and as a prophylactic measure against the development of epididymitis.

The frequent removal of the purulent secretion is the essential of cleanliness. The passage of the stream of urine is nature's method of cleansing the urethral canal; this should be encouraged by diluent and mucilaginous drinks.

The medicinal treatment of gonorrhœa comprises both local and constitutional mea-

sures which should be adapted to the stage of the disease and the intensity of the symptoms.

Although the purely local character of gonorrhœal inflammation might seem to suggest only local treatment, yet experience has proven that its judicious combination with general treatment yields the best results.

For the relief of the painful urination consequent upon the passage of an acrid irritating fluid through the inflamed, highly sensitive urethra, the urine should be rendered bland and unirritating by the use of alkaline diuretics.

The acetate or citrate of potash, alone or in combination with spirits of nitrous ether or some other mild diuretic, are probably the best agents for alkalinizing the urine.

The copious use of Vichy, Apollinaris, of infusions of flaxseed, slippery elm, etc., serve the double purpose of promoting the flow of urine while modifying the relative proportion of its salts and watery constituents.

Eau de Goudron is another agent which

possesses a remarkable efficacy in modifying the irritating quality of the urine by the peculiar resinoid principles it contains.

Alkaline mixtures should, as a rule, be given after meals, as they thus act more efficiently and are not so liable to derange the stomach.

General hot baths, or the application of water as hot as can be borne to the under surface of penis and along the perineum by means of a cloth or sponge, is found to subdue inflammation and render urination less painful.

Another excellent expedient for the relief of scalding of the urine is to have the patient immerse the penile organ in a vessel of hot water during the act of micturition.

For the relief of the chordee, which is so distressing a symptom, the application of belladonna or cocaine ointment along the course of the canal and perineum gives good results.

Camphor, hyoscyamus, lupuline, bromide of potassium, gelsemium, may be given with advantage. These remedies act by diminishing the irritability of the neck of

the bladder, rather than by their reputed antiaphrodisiac property.

The injection of a two to four per cent solution of cocaine several times a day has given relief to the pains felt in micturition and erection when other means have failed.

A difference of opinion exists among authorities as to the proper time for beginning the use of injections, a majority recommending their delay until acute symptoms have subsided.

Experience proves that the objections to the early use of injections are imaginary rather than real. The same principles of treatment indicated in other catarrhal inflammations, as conjunctivitis, tonsillitis, etc., are applicable here.

The practice of employing strong injections in the treatment of acute urethral inflammation is a custom more honored in the breach than in the observance.

The injections should never be used of sufficient strength to cause pain, smarting, or prolonged discomfort. Beyond a slight sensation of heat or warmth, subsiding

within a few minutes, no subjective symptoms should be excited.

A mild solution of the sulphate, acetate, or permanganate of zinc, or nitrate of silver, is the best injection in the early stage of gonorrhœa.

The efficacy of injections depends less upon the selection of the astringent used than the mode of its employment and the intelligent adaptation of the strength of the solution to the condition of the urethra.

A faulty use of the syringe is the explanation of frequent failures with most excellent injections; a new recruit should be carefully drilled in the technique of the procedure.

A rubber syringe, capacity of one-half ounce, with an olive- or pyramidal-shaped nozzle, is the best, as being attended with less danger of wounding the sensitive, inflamed mucous membrane, while affording greater resistance to the escape of the injection from the urethral orifice.

The injection is most conveniently and efficiently employed by the patient in a standing position.

It should be retained from three to five minutes. It should be used at first several times daily, afterward not so often.

It is a judicious plan to use the injection immediately after the act of urination, the stream of urine flushing the canal and cleansing it of the accumulated secretion.

Hot-water injections (the Curtis method) are not devoid of danger of exciting prostatitis, vesical irritation, epididymitis, etc. The brilliant results claimed for it by its author have not been verified in the experience of others.

The theory of the bacterian nature of gonorrhœa has led to the recommendation of germicide injections, such as solution of bichloride of mercury, nitrate of silver, etc., in its treatment.

The results of this treatment have, unfortunately, proved disappointing. The pathogenetic power of the bacteria seem but little affected by the sublimate solution, due in all probability to the fact that its germicidal action does not extend to the crypts of the urethra and prostatic follicles where the diplococci find lodgment.

In a later stage, the use of vegetable astringents, as pinus canadensis, hydrastis, catechu, etc., often give better results than the mineral salts.

Isolating injections, consisting of an inert powder—as subnitrate of bismuth—in solution, combined or not with an active agent, give admirable results; the powder is deposited upon the urethral walls and separates the diseased surfaces from contact.

To prevent clogging of the canal from agglutination of the particles of bismuth, mucilage with glycerin, or, better still, an emulsion of vaseline or fluid cosmoline may be used as a vehicle.

When the acute stage of gonorrhœa has passed, internal remedies may be given with advantage, as copaiba, cubebs, turpentine, oil of santal wood, oil of erigeron, matico, etc.

These remedies have been termed "antiblenorrhagics," from their efficacy in modifying inflammatory conditions of mucous surfaces.

Among these drugs, copaiba and cubebs

are the most potent in their action. They are principally eliminated by the kidneys, and they act by direct contact with the mucous membrane of the urethra.

On this account they are only efficacious when the inflammation is confined to the urinary passages. They cure urethritis, but not vaginitis.

Remedies of this class are not always well tolerated. They may occasion various forms of gastro-intestinal disorder, brisk purgation, congestion of the kidneys, cutaneous eruption, etc.

The eruption of copaiba is of an erythematous or papular character; most marked upon back of hands, wrists, and ankles, but may be generalized, it is attended with intense sensations of burning and itching. It may be mistaken for syphilitic roseola.

CHAPTER IV.

COMPLICATIONS OF GONORRHŒA.

BALANITIS.—When the mucous membrane of the glans penis is the seat of inflammation, it is termed *balanitis*. When the internal reflection of the prepuce is also involved in the inflammatory action, it is termed *balano-posthitis*.

This complication is generally due to an extension of the urethral inflammation by continuity of structure. It rarely results from direct contagion of the balano-preputial membrane from impure intercourse.

In balanitis, the mucous membrane of the glans is reddened, thickened, excoriated in patches, with a yellowish, somewhat offensive secretion.

In severer cases, the whole glans may be swollen, deprived of its epithelium, sometimes superficially ulcerated, the prepuce

highly inflamed, œdematous, with a thick greenish-yellow discharge.

PHIMOSIS is a more serious complication. The inability to retract the glans interferes with treatment, and may render a diagnosis between balanitis and a subpreputial chancroid difficult, if not impossible.

It is especially liable to occur in persons with a long, narrow prepuce, as a result of swelling of the glans, or œdema of the prepuce contracting its orifice.

PARAPHIMOSIS is applied to the condition where the retracted prepuce cannot be brought forward over the glans; it is an exceedingly painful complication.

Unless reduction be effected, the constricting ring formed by the preputial orifice may interfere with the circulation to the extent of producing ulceration and gangrene of the integument and glans.

LYMPHANGITIS may occur in connection with gonorrhœa. The superficial lymphatic vessels passing along the dorsum of the penis are enlarged and swollen, and appear as small lines or cords quite perceptible to the sight as well as the touch.

ADENITIS or bubo occurs as a comparatively rare complication, in the proportion of one case to every fourteen of gonorrhœa in men, much less frequently in women.

Simple bubo is characterized by a slight enlargement and sensitiveness to pressure of one or more glands in the inguinal region of one or both sides; the pain and inconvenience are aggravated by motion, as in walking; the inflammation rarely proceeds to suppuration.

FOLLICULITIS.—The extension of the inflammation into the follicles or mucous crypts along the floor of the urethra may occlude their ducts, and result in the formation of follicular abscesses.

These appear in the form of small, round, or pedunculated tumors at the under surface of the urethra, which gradually soften and open upon the cutaneous surface, rarely within the urethra.

PERI-URETHRAL ABSCESS.—When the inflammatory process involves the loose connective tissue around the urethra, it may cause circumscribed swellings resulting in peri-urethral abscess.

These phlegmons are usually seated beneath the fossa navicularis or at the peno-scrotal angle. Their chief significance is derived from the fact that they may break into the urethra, causing extravasation of urine, or they may be followed by fistulæ.

During either the acute or chronic stage, the inflammation may extend to the deeper urethral structures, and give rise to a different group of complications.

COWPERITIS, or inflammation of Cowper's glands, one or both, may result from an extension of the inflammation along their ducts.

This is characterized by more or less pain, distinct hard swellings on one or both sides of the raphé, which renders walking or sitting extremely painful; suppuration may occur.

ACUTE PROSTATITIS.—The inflammation may involve the follicles and glandular elements of the prostate; sometimes the surrounding cellular tissue may be infiltrated.

Systemic disturbance usually attends this complication; there is loss of appetite, con-

stipation, sometimes chills and febrile disturbance.

The local symptoms are a sense of weight and distention in the ano-perineal region, frequent painful urination, attended with more or less straining and tenesmus, sometimes complete retention, painful defecation, etc.

Inflammation of the prostate may terminate either by resolution or in suppuration; when an abscess forms, it is usually the result of a fusion of several follicles which have become distended with pus.

In the event of suppuration, the pus is usually discharged into the urethra by one or several openings, or it may be evacuated through the rectum.

With the subsidence of the prostatitis, the urethral discharge, which had diminished or entirely disappeared, resumes its former characters of profusion and purulency

Acute prostatitis may run into a chronic form, which is apt to be persistent and intractable, or the milder symptoms of chronic prostatitis may develop without an acute attack.

The most characteristic symptom of *chronic prostatitis* is the discharge of a thin, clear, or opaline stringy mucus, sometimes mixed with pus; the discharge may be more or less constant, or it may be only forced out by straining, as in the act of defecation.

Prostatitis may result in the hypertrophic induration of the organ, especially of the middle lobe, sometimes the whole prostate may acquire a hard, almost cartilaginous consistency.

GONORRHŒAL CYSTITIS.—Extension of the inflammation to the neck of the bladder may be spontaneous, or it may be determined by any cause of irritation acting upon the deep urethra, as the passage of a sound, deep urethral injections etc.

When the vesical neck is invaded by the inflammation, the discharge generally ceases, to reappear when the vesical symptoms subside.

The symptoms of gonorrhœal cystitis are a sense of weight in the perineum, tenderness on pressure over the pubic region,

irritability of the bladder, betrayed by frequent calls to urinate, tenesmus, etc.

There is more or less pain and scalding in passing water, particularly at the end of micturition; the urine is ropy and turbid, and the last drops are often mixed with blood.

The severity of the attack varies in different individuals. In mild cases, the more acute symptoms subside in the course of three or four days; it rarely persists longer than eight or ten days.

Gonorrhœal cystitis rarely passes into the chronic form. With the subsidence of the acute vesical symptoms, the urethral inflammation may regain its intensity, and the discharge reappear in full force.

EPIDIDYMITIS is one of the more frequent complications of gonorrhœa, occurring in from twelve to sixteen per cent of all cases.

Various theories have been assigned to the causation of this condition. "Metastasis," "sympathy," "reflex influence," etc., but its pathogenesis has not been satisfactorily determined.

The fact that extension of the inflammation to the deep urethra is an essential preliminary step to epididymitis would render it probable that there is a gradual extension of the inflammatory action through the vas deferens to the convoluted portion of the tube.

Among the determining causes may be mentioned, the passage of full-sized sounds, irritating injections into the deep urethra, immoderate sexual indulgence, irritation of the prostatic urethra from any cause, etc. In many cases the exciting cause is not traceable.

The duration rather than the intensity of the urethral inflammation would seem to favor the development of this complication; it is usually met with from the third to the sixth week, sometimes not before the second or third month.

While the epididymis is the most frequent seat of the inflammation, both the cord and the tunica vaginalis may be involved; the inflammatory process may also invade the body of the testis, but this never occurs without the epididymis being primarily affected.

Both testicles may share in the inflammatory process, although the left is the one most frequently involved, about twice as often as the right.

The shifting of the inflammation to the scrotal organs is attended with a cessation of the urethral discharge, which, however, is destined to reappear with the decline of the testicular inflammation.

The symptoms consist of a sense of weight and tenderness in the cord and scrotal organs, the pain shooting upward to the groin, thigh, and lumbar region; the testicle is swollen and painful; pressure occasions a sense of nausea.

Sometimes the attack is ushered in by a chill, fever, and more or less constitutional disturbance; constipation is a constant condition.

As the inflammation increases, the testicle becomes more swollen, often attaining the size of the fist; the scrotal tissues become hot, red, and œdematous, often there is effusion in the tunica vaginalis; the pain, aggravated by the slightest motion, becomes almost excruciating.

The individual parts of the scrotal organs cannot be distinguished, manipulation reveals only a swollen, hard, more or less fluctuating mass.

The duration of the acute symptoms is rarely less than a week; they subside with the resorption of the fluid in the sac of the vaginal tunic, œdema of the scrotal tissues disappears, and the swelling of the epididymis decreases.

In a majority of cases, the affected parts gradually regain their normal condition; the tissues may, however, remain engorged for some time; resorption of the plastic products is extremely slow, months may be required for their involution; not infrequently an irregular induration of the globus minor persists through life.

The plastic engorgement about the epididymis is the most serious feature of the complication; it may result in permanent occlusion of the spermatic ducts and, when bilateral, may render the patient sterile.

Under such circumstances, the patient, though deprived of his procreative power, is not necessarily impotent, his sexual appe-

tite and capacity remain unimpaired, and, barring the absence of spermatozoa, the seminal fluid is not altered in quantity or quality.

GONORRHŒAL CONJUNCTIVITIS, a serious, but fortunately rare complication, is caused by the inoculation of the conjunctival mucous membrane with gonorrhœal pus.

The contagious matter may be derived from the patient's own urethra, from the opposite eye already infected, or from the urethra of another person.

The transference of the pus from the urethra to the eye may take place by the medium of towels, instruments, by handling the penile organ as in micturition, and inadvertently bringing the fingers in contact with the eye, and in various other ways.

The essential features of conjunctivitis originating from gonorrhœal pus are the same as met with in ophthalmia neonatorum and common purulent ophthalmia; the difference is one of degree only.

In gonorrhœal conjunctivitis, the inflammatory process is characterized by a greater intensity and rapidity of action, and not in-

frequently results in partial or complete loss of vision.

The symptoms of inflammation begin to manifest themselves within a few hours after inoculation, the eye feels dry and itchy, and the conjunctiva becomes reddened as in simple cartarrhal conjunctivitis.

The symptoms rapidly increase in severity, there is intense photophobia, the lids become enormously swollen and œdematous, the conjunctiva injected and chemotic—raised in folds around the cornea, with an abundant discharge of thick, greenish pus.

If the chemosis be not relieved, the cornea may become strangulated and its tissues break down from lack of blood supply, rapidly ulcerate and slough; prolapse of the contents of the globe may occur through the perforation.

These inflammatory phenomena are almost incredibly rapid in their evolution. The series of changes just described may take place in three or four days, or the entire process may require only twenty-four hours.

Under prompt appropriate treatment, the

inflammation may be arrested and its more serious consequences averted, but more or less permanent injury is always to be apprehended from this complication.

The term GONORRHŒAL OPHTHALMIA is also applied to a metastatic or sympathetic inflammation of the eye, peculiar to patients suffering from gonorrhœa. It differs from gonorrhœal conjunctivitis in its exciting cause and the structures affected.

Unlike the latter, it occurs only in patients who have gonorrhœa; it never results from the inoculation of contagious matter; the structures principally affected are the sclerotic coat and iris.

The symptoms are usually mild; there may be slight photophobia, haziness of vision, and if the conjunctiva be implicated, evidences of a simple catarrhal conjunctivitis may be present, occasionally there may be plastic effusion with adhesions of the iris.

GONORRHŒAL RHEUMATISM.—This term is applied to certain joint affections occasionally developed during the course of gonorrhœa, between which there seems to

be a causal connection, rather than a mere coincidence.

The pathogenesis of gonorrhœal rheumatism is not definitely understood. It has been variously explained as "metastatic," "pyæmic," "reflex," or due to "the development of a latent rheumatic diathesis." Idiosyncrasy, doubtless, plays an important rôle in its production.

The fact that joint complications never occur except in gonorrhœa affecting the urethra has led to its designation of urethral rheumatism or urethral synovitis. It may also follow traumatism or irritation of the urethra from any cause.

Females are comparatively exempt, probably from the comparatively rare localization of gonorrhœa in the female urethra. When it does occur in women, it is said that anchylosis is an invariable result.

The time of the occurrence of the joint affections is usually from the second to the third week of the disease. It manifests a remarkable affinity for the large articulations, as the knee and ankle joints, hip and

elbow, although other articulations may be affected.

The tendinous sheaths in the vicinity of the joint may be involved, constituting tendinous synovitis; certain muscles, more particularly the cervical and deltoid, as well as the bursæ of knees and elbow joints, may be attacked.

The symptoms of gonorrhœal rheumatism are usually mild in character; the attack is rarely preceded by premonitory constitutional symptoms; occasionally it may be ushered in by a chill, followed by moderate fever.

The affected joint becomes swollen and painful upon pressure or movement. The swelling increases as the extravasation and serous effusion become greater, and is usually chronic in duration, often lasting several weeks or longer. Anchylosis from rapid formation of fibrinous adhesions is a not infrequent termination.

Gonorrhœal rheumatism is distinguished from the acute articular variety by its milder symptoms, the absence of sweating, acid urine and cardiac complications, its being

mono-articular, rather than poly-articular, and its greater tendency to hydrarthrosis and articular stiffness, and finally, by its non-amenability to anti-rheumatic remedies.

CHAPTER V.

TREATMENT OF COMPLICATIONS.

THE treatment of *balanitis*, when the glans may be freely exposed, is simple and usually promptly successful; cleanliness is the only essential.

In *balano-posthitis*, a piece of soft linen or lint should be interposed to keep the surfaces separated, or simply dusting with any inert powder to absorb the discharge, is all that is necessary.

When complicated with *phimosis*, the inflamed surfaces may be reached by a flat-nozzled syringe introduced between the glans and prepuce, and an astringent injection thrown up.

Exceptionally it may be necessary to slit up the foreskin along the dorsum or sides, or circumcision may be performed.

Paraphimosis, if seen at an early stage, be-

fore there is much œdematous swelling or adhesions have been formed, may generally be reduced by compressing the glans with the fingers of one hand, or by means of a flat rubber-band, sufficiently to allow the prepuce to be drawn over it.

If there is much œdema in front of the constricting ring, the infiltrated serum should be first evacuated by means of multiple punctures, before an attempt at reduction is made. If adhesions have formed, the constricting ring should be slit open with a bistoury.

In the treatment of *peri-urethral abscess*, prompt intervention is necessary; they should be opened without delay, as otherwise extravasation of urine or urethral fistulæ may result.

In the treatment of *lymphangitis* and *engorgement of the inguinal glands*, active measures are rarely necessary; usually rest is all that is required.

The use of counter-irritation over the bubo by means of tincture of iodine, or compression by means of a specially constructed pad, usually dissipates the inflammatory

symptoms, which rarely proceed to suppuration.

The supervention of *acute prostatitis* in the course of gonorrhœa is a signal for the immediate disuse of injections.

Absolute rest should be maintained, saline purgatives and alkaline diuretics or demulcents should be given, hot sitz-baths, hot fomentations applied to the perineum, and suppositories of opium, belladonna and hyoscyamus should be used *per rectum*.

If suppuration occurs, the same plan of treatment should be employed; the abscess frequently opens spontaneously into the urethra; if it points toward the rectum, it may be incised with a curved bistoury through the rectal walls.

The treatment of *chronic prostatitis* is usually prolonged and difficult. Injections into the prostatic sinus of a solution of nitrate of silver and blisters to the perineum are sometimes successful. The internal use of tinct. chloride of iron with cantharides is of value.

For the treatment of *gonorrhœal cystitis*,

absolute rest is essential; infusions of linseed, marshmallow, or triticum repens should be given, and opium and belladonna suppositories used per rectum.

The tenesmus and dysuria should be combated by hot baths, hot fomentations applied over the hypogastrium, the hypodermic injection of morphia, etc.

Only when retention of urine is complete and cannot be relieved by other means, should the use of the catheter be resorted to. A velvet-eyed catheter should always be employed.

In some cases, the distressing symptoms may be relieved by the introduction of pieces of ice in the rectum, or preferably by the use of the rectal cone, through which a continuous current of ice-cold water may be passed.

In the treatment of *epididymitis*, rest in a recumbent posture is all-important; the scrotum should be elevated above the thighs, and supported by means of a folded towel or handkerchief, in order to prevent dragging upon the sensitive cord.

Sedative lotions of aconite, lead, and

opium should be kept continuously applied. Sometimes hot fomentations or poultices, of which the tobacco poultice is the best, more quickly relieve the pain and inflammation.

In some cases, bladders or rubber bags filled with ice, or hot fomentations, followed by ice-cold douches, afford the most relief.

Compression by means of a thick paste of mineral earth, strapping the testicle, puncturing the tunica vaginalis, incising the tunica albuginea are among the means recommended for this complication.

Of internal remedies, pulsatilla given in one-tenth minim doses every hour or two, is claimed to have a specific effect in cutting short the inflammatory symptoms.

For the plastic engorgement of the epididymis, which persists after subsidence of the acute symptoms, various resolvents have been recommended; the topical application of mercury, belladonna, and iodoform in ointment, and the internal use of iodide of potassium give the best results.

In the treatment of *gonorrhœal conjunctivitis*, the high grade of inflammation present and the rapidity with which serious re-

sults follow, demand the most prompt and energetic treatment.

Cleanliness, the frequent removal of the purulent secretion, the application of ice-cold compresses frequently renewed, or the continuous application of cold by means of bladders filled with ice, cauterizations of the conjunctival mucous membrane with nitrate of silver are among the means to be employed.

Notwithstanding the most energetic treatment, this dreaded complication may leave indelible traces of its existence in the shape of granulations, corneal opacities, staphyloma, or entire loss of the eye.

In the treatment of *gonorrhœal rheumatism*, rest and immobilization of the affected joints are as important as in acute articular rheumatism.

The anti-rheumatic remedies, alkalies, salicylic acid, salicin, oil of wintergreen, etc., are without value. The most efficient medication consists of revulsives, blistering, and puncture when there exists effusion in cavity of joint.

The affected joint should be painted freely

with tinct. of iodine and put up in a splint, which should be daily removed, and with an occasional reapplication of the iodine.

When acute symptoms have subsided, gentle movements, massage, electricity, etc., are serviceable in securing free motion, and preventing anchylosis.

CHAPTER VI.

GLEET.

THE time required for the evolution of gonorrhœa is, on the average, four weeks. There is no definite limit which separates the acute from the chronic stage. A urethritis lasting longer than six weeks usually manifests the milder symptoms and the general characters of gleet.

The lapse of gonorrhœa into gleet is favored by a variety of circumstances; neglect, or too early discontinuance of treatment, indulgence in stimulants, improper diet, sexual intercourse, etc.

In certain individuals, it would seem to depend upon local debility of the urethral mucous membrane, relaxation of the tissues, constitutional weakness, etc.

Gleet usually presents itself in the form of a thin transparent mucoid secretion, more or less constant, only in sufficient

quantity to keep the lips of the urethra moist or glued together. It is unattended by pain or other signs of inflammation.

Another variety of gleet is characterized by the absence of appreciable discharge through the day and the collection during the night of a drop of thick yellowish pus at the orifice of the urethra. Or it may appear in the form of threads (*Tripperfäden*) in the urine.

This condition, known as the *goutte militaire* of the French, always points to the existence of granular spots or isolated patches along the course of the canal to which the disease is limited, or it may be symptomatic of stricture.

This thickened granular condition of the membrane favors the formation of organic stricture, gleet may thus be an efficient cause, as well as a symptom of stricture.

The duration of gleet is practically indefinite; it may temporarily disappear, and under the influence of various exciting causes redevelop into a copious, purulent discharge, with other acute characters.

Gleet is extremely obstinate to treatment,

and its cure is always conditioned upon the removal of the stricture or other cause which produces it.

It is not always possible to determine absolutely the contagious or non-contagious character of a gleety discharge; the presence or absence of pus globules affords the most correct indication.

A gleet, primarily innocuous, may, under the influence of stimulants, venereal indulgence, etc., be promptly developed into a purulent, and therefore a contagious discharge.

While, in the majority of cases, gleet represents the chronic form of gonorrhœa, it may develop without a preceding urethritis. Idiopathic gleet is generally due to a hypersecretion of the mucous follicles of the urethra, or it may result from various affections of the prostate gland.

In *prostatorrhœa*, the discharge consists of a thin glairy fluid, resembling the white of an egg. It is especially apt to occur after straining at stool; the urine is often loaded with minute floating filaments, with small particles of solidified mucus.

TREATMENT.—Gleet, whether representing the terminal stage of gonorrhœa, or symptomatic of stricture or other abnormal condition of the urethra, is extremely obstinate and difficult to cure.

The first essential for the intelligent and successful treatment of gleet is a recognition of the nature and seat of the pathological lesion upon which it depends; for this purpose, exploration of the urethra with bougies or examination with the endoscope is necessary.

The introduction of olive-pointed bougies will usually reveal the location of granular or congested patches of mucous membrane, by the increased sensitiveness caused by the instrument in passing over these surfaces.

In the majority of cases of chronic discharge consecutive to urethritis, the seat of the disease will be found in the deeper portion of the urethra.

These cases are most efficiently treated by astringent or isolating injections introduced by means of a syringe with a long nozzle—the deep urethral syringe.

The strength of the injection may be increased according to the effect produced,

one-half to two grains of nitrate of silver, two to five grains of sulphate of zinc, and a corresponding strength for other astringents; strong solutions of hydrastis and pinus canadensis are sometimes of superior efficacy to mineral astringents.

It is always a wise precaution, when strong injections are to be introduced into the deep urethra, to instruct the patient to not empty his bladder for some time previous, as the accidental passage of a part of the injection into the bladder may be attended with disagreeable results.

Instillations of a few drops of a solution of nitrate of silver, five to fifteen grains to the ounce, or cauterization of the prostatic urethra with the fused nitrate, by means of a cupped sound or porte-caustique, blistering of the perineum, etc., may succeed when milder measures fail.

In many cases of granular urethritis, the introduction of soluble bougies of gelatin or cocoa butter, medicated with various astringents and sedatives, which are thus maintained in prolonged contact with the diseased surface, constitutes a good plan of treatment.

The frequently repeated introduction of full-sized bougies is often of service even when no stricture exists; the contact and pressure of the cold steel surface atrophies the glandular cul-de-sacs which are the seat of the disease.

Irrigation, by means of a soft-rubber catheter connected with a fountain syringe or a Pollitzer's bulb, of hot or cold water, medicated with boracic acid, biborate of soda, etc., is useful when the vesical neck is involved.

In the treatment of gleet, the anti-blenorrhagics are of little avail. Turpentine and Eau de Goudron are to be preferred to the other preparations of this class.

Tincture of chloride of iron, alone, or in combination with tincture cantharides, tincture gelsemium, the citrate of iron and quinine, often give better results than the balsamics.

As many cases of gleety discharge are associated with an impaired condition of the general health, neurasthenia, hypochondria, various diatheses, nutritive and nerve tonics

and other remedies appropriate to these conditions should be employed.

The sexual hygiene of marriage is often indicated in many of these cases where the discharge is simply due to a hypersecretion of the mucous follicles of the urethra or prostate.

Care should be taken, however, to interdict marriage so long as the discharge contains an admixture of pus-corpuscles, as it then possesses contagious properties.

A large proportion of gleety discharges are symptomatic of stricture; in every case of persistent gleet, the urethra should be carefully examined with a view of determining its existence.

The stricture may be of large calibre, encroaching but slightly upon the normal size of the canal, but quite sufficiently to perpetuate a discharge almost indefinitely.

Stricture may be cured by progressive dilatation, temporary or continuous; by forced dilatation, by urethrotomy, internal or external, or by electrolysis.

Progressive dilatation, by means of bou-

gies gradually increasing in size, introduced every second or third day, constitutes by far the safest and best treatment in the immense majority of strictures.

The successful management of gleet, from whatever cause produced, demands the exercise of the most intelligent skill, as well as much time and patience on the part of both patient and physician.

CHAPTER VII.

GONORRHŒA IN WOMEN.

GONORRHŒA in women is characterized by its less relative frequency, and by certain peculiarities in its seat, symptoms, and course.

It occurs less frequently in women because certain conditions which favor its acquirement in men are wanting. The altered physiological secretions of a muco-purulent character from the genital tract, so common in women, and which constitute a fruitful source of masculine gonorrhœa, are not found in men.

Again, the urethra in women is not so much exposed during the sexual act; the mucous membrane of the vagina is much less sensitive, and is, moreover, protected by its mucous and sebaceous secretions.

The ordinary seat of gonorrhœa in women is the mucous membrane of the cervix

and vagina ; the entire genito-urinary tract, the vulva, vagina, urethra, uterus, tubes, ovaries, and investing peritoneum, may be involved in the inflammation at the same time, or successively.

Gonorrhœa in women is less severe than in men, both in its immediate and remote effects ; its symptoms are much milder, the painful subjective sensations less intense, the signs of inflammation less active and prolonged.

Exceptionally, the most disastrous sequelæ may follow—endometritis, pyosalpinx, abscess of the ovary, gonorrhœal peritonitis. Sterility may be the result of tubal disease.

Other causes besides direct contagion may excite inflammation of the genital mucous membranes, attended with purulent discharge.

The first intercourse, from wounding of the mucous surfaces, frequently repeated sexual indulgence, masturbation, the use of pessaries, the presence of ascarides, vegetations, and other causes of irritation.

The symptoms of gonorrhœa in women vary somewhat, as it affects the vulva,

vagina, urethra, or uterus. In all cases the usual signs of catarrhal inflammation are present, with the production of a discharge, first mucoid, then frankly purulent.

In *vulvitis* there is increased redness, itching, and burning, with more or less tumefaction of the labia—sometimes the nymphæ may be so enormously swollen as to occlude the entrance of the vagina.

The discharge is abundant, and collects upon the hairs of the external parts, matting them together. Micturition is painful, even when the urethra is not involved, from contact of the urine with the superficial excoriations caused by the acrid discharge, which are analogous to the erosions of balanitis.

The inflammatory process may invade the mucous follicles of the vulva, and also pass along the ducts of Bartholini's glands, resulting in the painful pyriform tumors so characteristic of vulvo-vaginal abscess.

Vaginitis is by far the most common expression of gonorrhœa in women. There is increased redness, heat, tenderness, and swelling of the vaginal mucous membrane,

which may be deprived of its epithelium in places; and the discharge, first thin and transparent, afterward becomes abundant, of a creamy consistence, greenish-yellow, or streaked with blood.

A characteristic of vaginal inflammation is its tendency to the production of granular vaginitis. The granulations are due to hypertrophy of the vaginal papillæ; they are reddish, slightly projecting, sometimes isolated, sometimes grouped.

Urethritis is rarely found unassociated with vaginal inflammation. Irritability of the bladder, frequent micturition, and other evidences of implication of the vesical neck are added to the symptoms of vaginitis, when the urethral mucous membrane is involved.

The *cervix uteri*, from its exposure to direct contact with the penile orifice, is frequently the primary seat of gonorrhœal inflammation. Often the vagina is secondarily involved by extension of the cervical inflammation.

The inflammation is not confined to the cervix and vagina, but may extend to the

lining membrane of the womb. In rare cases it is propagated along the Fallopian tubes, and may result in complications of grave pathological importance, such as endometritis, salpingitis, oöphoritis, occlusion of the tubes, sterility, etc.

When the cervix uteri is alone involved, the usual signs of inflammation are present, the discharge is less frankly purulent, more gelatinous in consistence, remarkably adherent to the lips of the os, and removed with difficulty.

Erosions and superficial ulcerations of the cervix are a characteristic feature. Of all mucous surfaces subject to gonorrhœal inflammation, that of the neck of the womb is most liable to ulcerate.

In women, as in men, a gonorrhœa may pass into the chronic stage. There is an especial liability to this sequence when the inflammation occupies the vaginal cul-de-sac or the uterine mucous membrane.

In chronic urethritis in women, there may be found localized patches of pointed granulations in the urethra, which serve to keep up the discharge indefinitely.

A chronic vaginitis or urethritis is not easily detectable if the vagina be copiously syringed or the patient urinate immediately before the examination, from the absence of local signs of inflammation.

TREATMENT.—The treatment of gonorrhœa in women is based upon the same general principles indicated in the same affection in the male. It differs in some details, depending upon the seat and extent of the inflammation.

Rest, simple diet, and suitable hygienic measures are essential. The importance of cleanliness cannot be over-estimated.

The vaginal canal should be thoroughly cleansed of all purulent secretions by copious syringing, preliminary to the use of medicated injections.

Alkaline diuretics may be given with advantage, whether the urethra be involved or not, as they lessen the scalding pain incident to the passage of acid urine over abraded surfaces.

In vulvitis or vaginitis, the use of warm sitz-baths, hot-water injections, medicated with borax or alum, by means of the foun-

tain syringe, relieve pain and inflammatory symptoms.

Astringent injections may be used with advantage in the acute state. Experience proves that preparations of alum, borax, tannin, etc., are more efficient in vaginitis than the zinc and silver salts.

In urethritis the same injections recommended in the treatment of urethritis in the male may be employed. Balsamics are also indicated in the second stage.

Vaginal suppositories, containing various astringents, are convenient of application, and subserve a useful purpose by maintaining medicinal agents in prolonged contact with the diseased surface.

After the acute inflammation has subsided, so as to permit the introduction of a speculum, the granular, eroded spots on the vaginal or cervical mucous membrane shoud be touched with a strong solution of nitrate of silver, or the glycerite of tannin or iodine.

A *chronic urethritis* is most efficiently treated by the introduction of a stick of nitrate of silver, turning it within the canal

and quickly withdrawing it. This process may be repeated every second or third day.

Experience proves that this procedure is attended with little or no risk of producing complications, or favoring the formation of organic stricture.

Endometritis, *purulent salpingitis*, and *ovaritis* fall to the province of the gynæcological surgeon.

PART II.

CHANCROID AND ITS COMPLICATIONS.

CHAPTER VIII.

THE NATURE, SOURCE, AND SEAT OF CHANCROID

CHANCROID is a local venereal ulcer, essentially inflammatory in its nature, and rapidly destructive in its action.

Its principal characteristics are its purulence and virulence. Its pus is in the highest degree contagious, and may be inoculated upon the bearer or upon other individuals.

The contagion of chancroid is effected almost exclusively during sexual intercourse and upon the genital surfaces. It is, therefore, in its origin and location, essentially a venereal ulcer.

The contagious activity of the chancroidal

secretion is not limited to the genital sphere. It may be successfully inoculated upon any portion of the integumental covering. The mucous surfaces are equally susceptible.

Susceptibility to its action varies in different regions of the body. It is least manifest upon the head and face. The old idea that all venereal ulcers upon the face were necessarily syphilitic is incorrect.

The action of the chancroidal virus is purely local. It never infects the general system, or constitutes the starting point of syphilis.

The penetrating power of the virus is measured by the exact distance which separates the nearest lymphatic glands from the chancroidal ulcer.

It may enter the lymphatic vessels proceeding from the ulcer, but its course is arrested by the nearest glands. The lymphatic ganglia constitute an impassable barrier to the entrance of the poison into the system.

The lymphatic vessels which transport the virus, and the ganglia in which they terminate, may become the seat of chancroidal

ulceration and furnish an inoculable secretion.

The *chancroidal ulcer*, the *virulent lymphitis* and *virulent bubo* developed in connection with it, constitute the common sources of the chancroidal virus.

Experiments in inoculating the pus of common inflammations would seem to afford proof that chancroid may originate *de novo* under certain conditions of lust, filth, and impaired nutrition.

This hypothesis is farther strengthened by the natural history of chancroid; its analogy with other inoculable ulcers; and the fact of its greater frequency among the lower and abandoned classes where such conditions prevail.

The purulent portion of the chancroidal secretion alone contains the contagious element. Experiment proves that when the secretion is freed by filtration of its pus-globules, it is innocuous.

The nature of the chancroidal poison is unknown; microscopical and chemical analysis fails to reveal any difference between

the pus of chancroid and that of common inflammation.

Certain observers claim to have discovered in the pus of chancroid a specific microbe, to the presence of which they attribute its pathogenetic power.

The bacteriological evidence of the existence of a specific micro-organism is by no means decisive, and the question still remains *sub judice.*

Chancroidal pus, even after being dried for some time, retains its contagious activity. Its potency is still preserved after being largely diluted with water.

The admixture of the pus with certain pathological secretions does not destroy its contagious action. It may be transmitted in the process of vaccination, with the matter of gonorrhœa, with the syphilitic virus, producing what is termed "the mixed chancre."

Experiment has definitely settled in the affirmative the possibility of its transmission to animals, as cats, dogs, and rabbits, although the soil is less favorable than in

man to the development of typical chancroid.

The contagion of chancroid is, in the vast majority of cases, effected by *direct* contact during sexual intercourse; it may, however, be communicated *mediately*.

As examples of the latter mode of contagion may be mentioned the transference of the poison by means of surgical instruments, the fingers, towels, clothing, etc., soiled by the chancroidal secretion.

A man with a chancroid may have intercourse with a woman, and deposit the pus within her vagina, from which the next comer may be inoculated, the woman escaping the contagion.

For the inoculation of chancroid it is still a moot question whether a breach of continuity is essential; abrasions or rents of the mucous membrane, so common in intercourse, constitute a favorable condition.

It is probable that chancroidal pus deposited upon a sound epithelium acts as an irritant, eroding the membrane, and thus gaining entrance to the organism

When once the poison is introduced, its characteristic action is promptly manifested by inflammation, suppuration, and destruction of tissue.

The ulcerative action involves not only the epithelial elements, but also every constituent element of the derma and its appendages, and even the subcutaneous tissues.

Social and hygienic conditions exert an important influence in the etiology of chancroid. Its development is fostered by filth, privation, and misery; it is much more common among the lower classes where these conditions exist.

The prevalence of chancroid progressively decreases as we rise in the social scale. Among the higher classes it is comparatively infrequent.

The *genital or perigenital* regions are the common seat of chancroid, because these surfaces are more frequently brought into inoculative contact.

The glans and prepuce and sheath of the penis in the male; the fourchette, the labia,

the clitoris and vagina in the female constitute seats of predilection.

Extra-genital chancroids, around the anus, the inner surfaces of the thighs, etc., are more common in women; they frequently result from secondary inoculation, from habits of uncleanliness.

A venereal ulcer may be single or multiple, although as a rule there are a number of ulcers from either simultaneous or successive inoculations.

A number of abraded points may be inoculated at the time of contagion, or the secretion from the original ulcer may successively inoculate a number of points with which it comes in contact; the secondary ulcerations exhibit all the characteristics of the parent ulcer.

By *auto-inoculation* is meant the inoculation of a patient with the pus of his own chancroid; by *hetero-inoculation*, the inoculation of another individual.

The auto-inoculability of chancroid is one of its most distinctive characteristics; it furnished a valuable, but by no means an

absolute diagnostic sign in differentiating chancroid and chancre.

On account of the facility and certainty with which chancroid may be artificially propagated, and its evolution observed, of all venereal diseases it has been most experimented with, and its clinical history is best known.

CHAPTER IX.

DESCRIPTION OF CHANCROID.

If the pus of chancroid be inserted beneath the epidermis, the following phenomena are observed. Ordinarily within twenty-four hours, sometimes later a pustule is developed around the reddish point of inoculation.

Upon removal of the epidermis, there is found a typical chancroidal ulcer, with undermined edges and grayish floor, secreting a pus which is likewise inoculable.

This ulcer, abandoned to its own evolution, after a certain period during which it extends with more or less rapid destruction of tissue, shows a tendency to heal spontaneously.

Inoculation in generations is applied to repeated inoculations from one source, the secretion of each new ulcer furnishing the supply for a fresh inoculation.

Experiments in this direction prove that the skin manifests a gradually decreasing capacity for the reproduction of typical chancroidal ulcers, until finally only abortive pustules are produced.

After the susceptibility of the skin to suppurative action is exhausted, it may be regained after a period of repose, as exhibited in the case of common irritants—tartar emetic for example

A chancroid from contagion, and a chancroid from artificial inoculation, exhibit essentially the same characteristics, the celerity of development depending upon the conditions of implantation.

Chancroid has no period of incubation; the action of the virus begins immediately upon its implantation beneath the surface, although the morbid changes may not be at once manifest.

If deposited upon a sound surface, a certain time is requisite for the virus to erode the epithelium, and gain access to the tisues beneath.

If the pus be deposited upon an abraded surface, caused by coitus or otherwise, a pus-

tule results in from twenty-four to forty-eight hours; if within the mouth of the follicle, the characteristic ulcerative action may not be revealed for several days.

A *typical chancroidal ulcer* is circular or oval in outline, its edges abrupt, perpendicular or undermined, its floor uneven, as if worm-eaten, its border somewhat thickened. everted, and surrounded by an inflammatory areola.

The base of the ulcer is soft and supple when pinched up between the fingers; the underlying tissues have a normal feel without hardness or rigidity.

Sometimes, however, there is an œdematous engorgement of the tissues upon which the ulcer is situated. This thickening is not circumscribed, but diffuse, gradually blending with the surrounding healthy tissues.

The entire surface of the ulcer secretes abundantly a thick, grayish-yellow pus, sometimes sanguinolent or chocolate-colored. The floor is occupied by a pultaceous mass, consisting of the débris of disintegrated tissues.

The form of the ulcer is modified by the

accident of location. When a rent or wound is inoculated, it assumes a corresponding shape; when two or more ulcers have united, the outline is irregular and asymmetric.

Clinically, slight deviations from the typical ulcer just described are met with, constituting varieties of chancroid.

The *echthymatous* chancroid, instead of an open ulcer, remains scabbed over by its dried secretion, the pus oozing out from beneath the sides of the crust. If this be removed, the characteristic ulcer is revealed.

Exulcerous chancroid is superficial in character, the destruction of tissue slight, and the discharge scanty. The sore may be scarcely depressed, or may even be elevated above the surface, constituting the variety known as *ulcus elevatum*.

The *follicular* or *acneiform* chancroid presents the characters of an acuminated pustule sometimes slightly umbilicated. It results from the deposition of the virus at the mouth of a follicle which burrows down, and may produce considerable destruction of the perifollicular tissues before it opens externally.

The time required for the evolution of chancroid is ordinarily from four to eight weeks, which may be lessened or increased by complications, the condition of the patient's general health, treatment, etc.

The subjective symptoms are usually mild in character. The local pain and inconvenience are usually moderate, except when aggravated by irritant dressings or caustic applications.

The course of chancroid may be conveniently divided into three periods or stages: the progressive, the stationary, and the reparative stage.

The *progressive stage* is characterized by the more or less rapid extension of the destructive process, the area of tissue involved depending upon treatment and the patient's general condition. It usually lasts two to three weeks.

The *stationary stage* is signalized by the cessation of the active destructive process, the virus appearing to have spent its force. It usually lasts one to two weeks, during which the ulcer undergoes no appreciable enlargement.

The *reparative stage* is marked by a diminution of the secretion; the grayish floor clears up and becomes covered with healthy granulations; the thickened border melts away, the edges become sloping, and cicatrization advances from the periphery to the centre.

The *cicatrix* resulting from chancroid is thin, smooth, and not pigmented. Its dimensions depend upon the extent and depth of the ulcerative process.

Chancroid is modified in its development by the accident of its location, the occurrence of complications, and by peculiarities of individual constitution.

Situated upon the integument of the penis, and upon the external surface of the labia majora, it is apt to assume the follicular form.

Chancroids of the frænum occasion much pain, aggravated by motion, and are liable to perforate the urethra, giving rise to penile fistula. They rarely heal before the whole bridle is destroyed.

Upon the glans, or the sulcus at its base,

and internal surface of the prepuce, they are usually exulcerous, although they may be excavated and penetrate deeply into the substance of the glans.

Chancroids of the meatus may extend some distance within the urethral canal, producing an infundibuliform excavation, the cicatricial contraction often resulting in stricture.

Chancroids upon the female genitals present certain peculiarities. The larger extent of surface and the abundant secretion render perfect cleanliness more difficult, while anatomical conditions favor the inoculation of contiguous surfaces.

Perigenital chancroids, especially around the anus, are incomparably more frequent in women, from the exposure of these parts to secondary inoculation from contact with contagious vaginal secretions.

Chancroids of the rectum are apt to be complicated with painful fissure, cause extensive loss of tissue, recto-vaginal fistula, sometimes result in stricture of the rectum.

CHAPTER X.

THE DIAGNOSIS AND TREATMENT OF CHANCROID.

THE *diagnosis* of chancroid ordinarily presents but few difficulties, except in the formative stage. There are a number of lesions occurring upon the genitals for which it may be mistaken.

It may be confounded with an erosion or abrasion acquired during sexual intercourse. If such a sore be irritated by caustic applications or otherwise, its similitude to chancroid may be rendered most striking.

The diagnosis is easily cleared up by time and the test of treatment, under which the simple sore, instead of extending, promptly heals.

Herpes progenitalis may be mistaken for chancroid. The diagnosis is much more difficult in those rare cases in which the herpetic ulcer is solitary.

The vesicular character of herpes, its grouped arrangement, the superficial ulceration after rupture of the vesicles, their ready cicatrization under a simple protective dressing, all constitute valuable diagnostic signs.

The differentiation of chancroid from the *initial lesion of syphilis* is clinically the most important, but will be considered in connection with the diagnosis of chancre.

There are other lesions of syphilis with which chancroid may be confounded, as ulcerated mucous patches upon the genitals or perigenital regions.

An *ulcerated gumma* occurring upon the glans penis may closely simulate chancroid in appearance, as well as in its perforating, destructive character.

Ordinarily the history of the case, the coincident development of other eruptive elements, as well as the physical characters of the lesion, will indicate its true nature.

Epithelioma of the glans penis has been mistaken for chancroid—the slower development, the papillomatous character, the warty excrescences, etc., of the former are

usually sufficient for diagnosis—the microscope will resolve all doubt.

The physical characters of the chancroidal ulcer, its course and behavior, the peculiar properties of its secretion, seldom fail to furnish conclusive evidence as to its nature.

These specific characters may be thus enumerated, its abrupt, undermined edges, its uneven, pultaceous floor, its non-indurated base, and its abundant, purulent, readily inoculable secretion.

The *auto-inoculability of the secretion* is a valuable, but by no means absolute diagnostic sign. It has been shorn of its significance as an infallible test, since experiment has proven that the pus of other lesions possesses this property.

TREATMENT.—The treatment of chancroid varies according to its stage of development, its situation, and the complications present.

Chancroid has been compared to an animal parasite, which should be immediately destroyed and its contagious elements annihilated. For the accomplishment of this

object, excision or cauterization is employed.

Excision is practicable only when the chancroid is limited in extent, and so situated that the incision can include the entire ulcer and a portion of the healthy tissue underlying its base.

Even under the most favorable conditions, the results of excision are far from satisfactory, the fresh wound often takes on chancroidal properties, and a larger virulent surface is substituted for the original sore.

Destructive cauterization likewise often fails in its object; after the fall of the slough, the parts beneath may manifest all the characteristics of the chancroidal ulcer.

The cause of these failures has been explained on the ground that the surrounding tissues had become infiltrated with the virulent principle to such an extent that it was not possible to carry the destructive action beyond the sphere of its diffusion.

Destructive cauterization is not applicable to chancroids in certain situations, as in the urethra or upon the vaginal walls, for fear that the loss of substance may cause stric-

ture or establish fistulous communications with the bladder or rectum.

It is not indicated when the ulcer is situated in the neighborhood of other chancroids which cannot be likewise destroyed, as the secretion of the latter would certainly re-inoculate the former.

It is not indicated in chancroids advanced in their evolution, as it is probable that the surrounding tissues have become infiltrated, and the poison penetrated the lymphatics; the resulting virulent bubo would form a new focus of virulent action.

Clinical experience proves that the old rule that "every chancroid, no matter where found, or what its stage of development, should be immediately destroyed," must be restricted in its application.

Destructive cauterization should be limited to comparatively recent chancroids, favorably situated, and those which manifest a tendency to phagedenic action. In such cases it undoubtedly constitutes the most efficient means at our command.

Where it is not practicable, the indications for treatment are to limit ulcerative action,

and protect surrounding parts from fresh inoculation.

If the destruction of the ulcer be thorough and complete, the virulent sore is transformed into a healthy granulating wound, with spontaneous tendency to cicatrization.

In the selection of a caustic, a large number of agents are open to choice, the hot iron, Paquelin cautery, the galvano-cautery, nitric, sulphuric, chromic, and carbolic acids, acid nitrate of mercury, Vienna paste, chloride of zinc, etc.

The employment of the actual cautery is the revival of an old practice, the superiority of which over various potential caustics is doubtful.

Nitric acid, from the rapidity of its action, the convenience of its application, and the limitation of its destructive effect, is to be preferred.

The surface should be cleansed of its secretions, and with a glass rod or brush, or sharpened pine stick, the acid should be thoroughly applied over every portion of the ulcer.

Preliminary to its application, brushing over the surface a solution of cocaine, 5 to 10 per cent, or pure carbolic acid, deadens the sensibility without modifying the caustic action of the nitric acid.

The carbo-sulphuric paste, the Vienna paste, Canquoin's paste, formerly much employed, are objectionable, on account of the time required for their destructive action, and the difficulty of limiting its depth.

After the fall of the slough, the surface should be treated as a simple wound; it may be dressed with a covering of dry patent lint or borated absorbent cotton, or the lint may be smeared with vaseline; the dressings should be frequently changed.

Absolute rest should be maintained. Experience shows that chancroids most exposed to irritation, as upon the limb of the penis, the frenum, the fourchette, the anus, cicatrize most slowly.

When the abortive treatment is not practicable on account of the advanced evolution of the chancroid, or its situation, as within the urethra, for example, astringent and

stimulating applications should be employed.

Among the numerous drugs which modern pharmacy has placed at our disposal, iodoform is, perhaps, the most efficient and universally applicable in the treatment of chancroid.

It may be used in the form of a powder, sprinkled over the surface, in suspension in ether or tincture of benzoin, or combined with glycerin or vaseline in the form of an ointment.

When dissolved in ether and spread over the sore, evaporation leaves a coating of iodoform; the penetrating smell may be masked by placing over this a layer of lint moistened in a solution of cumarin.

In painful chancroids of the rectum, the anæsthetic properties of idoform render it most acceptable, in chancroids of the meatus or within the urethra, pencils of iodoform may be used.

Salicylic acid is another agent which has been used with advantage in the treatment of chancroid. It should be used pure at first, producing a slight escharotic effect. After

the fall of the slough, the sore should be dressed with an emollient ointment.

Pyrogallic acid, resorcin, bromine, hydrate of chloral (1 to 10 or 20), have all been recommended as possessing valuable properties in limiting the duration and hastening the cicatrization of chancroid.

Astringent lotions, as the black wash, solutions of nitric acid (1 3 to 1 pt.), of carbolic acid (1 to 50), etc., diminish the secretions and promote cicatrization.

Aristol, salol, europhen, dermatol, are among the recent products of the chemist's laboratory which have been found useful in the treatment of chancroid. Of these aristol is probably most highly recommended, and, as it is odorless, is often used in place of iodoform.

CHAPTER XI.

COMPLICATIONS OF CHANCROID.—TREATMENT.

ALTHOUGH chancroid never produces syphilis, it may be *complicated with syphilis* from the union of the virus of the two species in the same sore.

The virus of syphilis may be inoculated upon a chancroid; the virus of chancroid may be inoculated upon a chancre; or both viruses may be simultaneously inoculated at the same point.

In either case the resulting lesion possesses the physical properties and potentialities of the chancroid and chancre, and is termed *a mixed chancre.*

The essential characters of both viruses are preserved. The local symptoms of both, and the superadded constitutional manifestations of the one, are in no way modified by the accident of their coincident development in the same soil.

If double contagion take place during the same coitus, the evolution of the chancroid is, from its absence of incubation, first in order, and a typical chancroidal ulcer is produced.

After its classic period of incubation, the syphilitic virus begins to impress its specific characters upon the ulcer. Its base becomes indurated, followed by induration of the neighboring lymphatic ganglia.

Besides syphilis, chancroid may be complicated with inflammatory phimosis, paraphimosis, lymphangitis with bubo and with phagedæna.

Inflammatory phimosis and paraphimosis result from the same cause; swelling of the glans penis with œdematous infiltration of the prepuce preventing the free gliding of the prepuce over the glans.

When *phimosis* exists, there is generally a sub-preputial chancroid. As this cannot be exposed by retraction of the prepuce, the ulceration spreads, new points may be inoculated by the contained secretion and the high grade of inflammation may result in gangrene.

The gangrene is due to strangulation of the inflamed tissues. The slough may involve both layers of the prepuce, with considerable portion of the glans.

The cicatrization of chancroids involving the preputial orifice, is apt to result in contraction to such a degree that exposure of the glans becomes difficult or impossible, even after all inflammation subsides.

In *paraphimosis*, gangrene of the constricted parts is apt to take place, with sloughing of the portion of the prepuce lying in front, together with a part of the glans.

The action of the chancroidal virus upon the lymphatic system is by no means constant and invariable. Implication of the vessels and glands occurs not oftener than once in three cases.

Inflammation of the lymphatic vessels is usually manifest as a small cord with knotty swellings, extending along the back or side of the penis, and may be traced as far back as the root of the penis, or even farther.

Lymphangitis terminates either by resolution or by suppuration, in the form of

small abscesses. In virulent lymphitis these abscesses become converted into chancroids furnishing an auto-inoculable pus.

Bubo, complicating chancroid, may be either simple or virulent. The former may terminate either by resolution or suppuration; the latter always suppurates.

Bubo may develop without apparent implication of the lymphatic vessels. It may be confined to one side, or affect the glands in both groins. Suppurating bubo is usually monoganglical.

Simple, inflammatory bubo is due to sympathetic irritation of the glands, which may be manifest as an adenitis or periadenitis.

Virulent bubo is due to the absorption of the chancroidal virus through the intervening lymphatic vessels to the nearest chain of lymphatic glands.

The symptoms of simple and virulent bubo are essentially the same in the earlier stages. There is swelling of the glands, tenderness on pressure, aggravated by motion or the standing position, and other signs of inflammation.

It is only after suppuration has taken place, and the bubo is opened, that the distinction between simple and virulent bubo can be made with certainty.

The discharge from a simple bubo presents the characters of laudable pus, and is destitute of contagious activity. The wound shows a spontaneous tendency to heal, like an ordinary abscess.

The virulent bubo, when opened, takes on all the characters of a chancroidal ulcer. Its pus, though not at first freely inoculable, after two or three days exhibits this virulent property in a marked degree.

It has been claimed that the bubo becomes virulent only by accidental inoculation with the secretion of the generating chancroid. This is disproved by cases in which there has been no possibility of such transference.

The ulcer following a virulent bubo shows a tendency to increase in all directions, with rapid destruction of the surrounding tissues.

Its duration varies according to the treatment and the state of the patient's health.

After a time, granulations spring up from the floor of the ulcer, the margins assume a healthy condition, and cicatrization takes place.

The virulent chancroidal ulcer is liable to be complicated with phagedæna; the ulceration often assumes the serpiginous form, extending down the thighs, and laterally and upward upon the abdomen, and may be almost indefinite in extent and duration.

Phagedæna is the most formidable complication met with in connection with chancroid, both on account of its persistency and the extensive destruction of tissue it may occasion.

Phagedæna is not an inherent property of chancroid; its cause resides in peculiarities of individual constitution.

It cannot be transmitted to another individual by inoculation; pus from the most frightful phagedenic ulceration produces, by hetero-inoculation, an uncomplicated chancroid.

Various dyscrasiæ, alcoholism, mercurial treatment, debilitation from any cause, favor the production of phagedæna.

When a chancroid takes on phagedenic action, it is announced by certain changes in the aspect and behavior of the ulcer; the secretion is less abundant, thinner, and sanious, the floor becomes covered with a brownish-gray or black slough; the edges are rapidly undermined, and the ulcer becomes irregular in outline.

Two distinct varieties of phagedæna are recognized, the serpiginous and sloughing; the former is more superficial, and rarely occasions much local pain or constitutional disturbance.

In the serpiginous form, the ulcerative process advances at one side, undermining the skin and dissecting up the tissues, while an attempt at cicatrization is made at the other; this mode of progress gives its course a sinuous or serpentine outline.

In this manner, it may undermine the integument of the penis to the pubes, extend down the thighs or up the abdominal walls over the crest of the ilium.

Serpiginous ulceration is usually superficial in its action, but chronic in its course; after a stationary period, the phagedenic

process begins anew, and may thus continue for months or years, creeping over large areas of surface.

The sloughing phagedenic process is characterized by a more rapid course and a greater depth of the destructive action.

It destroys all the constituent elements of the skin and the subcutaneous tissues, often causing severe hemorrhage from erosion of the vessels; the glans penis, the labia, and the perineal structures may be wholly destroyed.

Sloughing chancroid is usually attended with severe pain and marked constitutional disturbance; in rare cases, it may cause death from debility and exhaustion.

A virulent bubo may also take on a phagedenic character, from which, as a new focus of ulceration, the destructive action may radiate in all directions.

Phagedæna does not modify the essential character of the chancroidal ulcer; the pus retains its contagious and auto-inoculable property throughout its entire course.

Gangrene, on the contrary, leaves the

parts after the fall of the slough in a healthy condition, with the secretions entirely destitute of virulent properties.

TREATMENT.—The treatment of sub-preputial chancroids, when complicated with *phimosis*, presents many difficulties from their concealed and inaccessible situation.

Astringent and stimulating applications should be introduced beneath the prepuce by means of a flat-nozzled syringe, and the parts kept cleansed by injections of tepid water frequently repeated.

If the inflammation reach a high grade, and gangrene threaten from strangulation of the tissues, the patient should be circumcised, or the glans exposed by a free dorsal or lateral incision.

In either case the line of incision will become inoculated and form a new chancroidal ulcer, but it is a lesser evil than the extensive mutilation which otherwise might result.

When *adenitis* develops in connection with chancroid, it is impossible to determine whether the bubo is simple or virulent until after it is opened.

The objects of treatment are to avert suppuration and promote resolution; this may be accomplished in the case of simple bubo, while a virulent bubo will inevitably suppurate.

Abortion of simple bubo may sometimes be effected by rest, the application of counter-irritants, as tincture of iodine or nitrate of silver, compression by a properly constructed pad, iodized collodion, etc.

When inflammatory symptoms are intense, the application of ice cold compresses, a rubber bag or bladder filled with ice, relieves pain and sometimes diminishes inflammation.

When suppuration occurs, the pus should be evacuated; if the bubo be simple, the pus is devoid of contagious properties, and the opening should be treated as a simple wound.

If the bubo be virulent, the pus will be found to possess all the properties of chancroidal pus, and the sore is to be treated as a chancroidal ulcer.

Instead of a free incision, a bubo may be opened by an aspirating needle, by mul-

tiple punctures, by the thermo-cautery, by a sharpened stick dipped in nitric acid, as recommended by different surgeons.

The *lymphangitis* rarely requires special treatment. If abscesses develop along the course of the lymphatic vessels, they are to be opened, and if virulent, treated as chancroids.

If the ganglionic chancroid should take on phagedenic action, thorough cauterization and other measures to be described in connection with phagedæna are to be employed.

The treatment of *phagedæna* must be constitutional as well as local, since it is not an inherent property of chancroid, but a product of individual pecularity.

As it is generally met with in persons debilitated from various causes, nutritious food, good hygienic surroundings, vegetable and mineral tonics are indicated.

Occurring in scrofulous, arthritic, and neurotic patients, the constitutional treatment appropriate to these dyscrasiæ will be found of invaluable service.

The most efficient local means we can employ against phagedæna is thorough cauterization; fuming nitric acid, sulphuric acid, or the actual cautery may be used for this purpose.

Treatment with solutions of permanganate of potash, the nitric acid lotion, sol. potassio-tartrate of iron, iodoform, etc., often gives excellent results.

Prolonged immersion of the phagedenic parts in hot water (95° to 100°) gives most satisfactory results. Under the continued influence of the hot water, the pain ceases, phagedenic action is checked, healthy granulations form, and the ulcer heals.

What will cure phagedæna in one individual, may be inoperative in another, so that the treatment is somewhat empirical, and determined by constitutional peculiarities.

PART III.

SYPHILIS

CHAPTER XII.

GENERAL CHARACTERISTICS OF SYPHILIS.

SYPHILIS is a virulent, contagious, constitutional disease, chronic in character, and susceptible of hereditary transmission.

There are two forms of syphilis, *the acquired and the hereditary;* the former term is applied to every syphilis contracted after birth, the latter to every syphilis transmitted by inheritance.

The essential nature of syphilis is unchanged by hereditary transmission, although it is somewhat modified in its course, symptoms, and evolution.

Syphilis commonly occurs but once in the same individual. Well-attested examples

of reinfection, although exceedingly rare, show that immunity from a second attack is not absolute.

Syphilis is always the product of a *specific virus* which is invariably derived from the secretions of another person similarly diseased.

When once the syphilitic virus is introduced into the system, the poison gradually pervades the entire organism, manifesting its action upon the various tissues by processes peculiar to itself.

Syphilis is characterized by a certain definite order or regularity in the evolution of its symptoms, which, for the sake of convenience, have been divided into stages, and classified as *primary*, *secondary*, *and tertiary*.

After the introduction of the virus, there is no appreciable evidence of its action during a period more or less prolonged, termed the period of the first incubation.

At the expiration of this period, on the average three or four weeks, the virus develops at its point of entrance a *chancre*,

which is termed the initial or primary lesion of syphilis.

This primary lesion constitutes for a time the sole sign, the unique expression of the disease.

A certain lapse of time then ensues, on the average six or seven weeks, termed the period of the second incubation, during which the nearest lymphatic glands undergo an indolent engorgement.

After the second incubation, the disease is said to become constitutional, although it is not definitely known at what precise time generalization of the virus takes place.

The beginning of the secondary stage is marked by an outbreak of general manifestations which may be diffused over the entire cutaneous surface.

The eruptions of the secondary stage vary in form, extent, and severity, while posessing certain specific features which stamp them as peculiar to syphilis.

The secondary eruptions are not continuously present, but come out in successive crops, periods of activity alternating with

periods of repose, in which no active symptoms are present.

Between the second and third stages of syphilis, there is an intermediate period of exceedingly variable duration, in which the disease remains latent, or with only occasional manifestations.

This lull in the manifestations may be permanent, marking the definite end of the disease, or it may be followed by tertiary symptoms.

The tertiary stage is characterized by lesions of the deeper structures, the subcutaneous tissues, the muscles, tendons, bones and the internal organs.

The duration of the tertiary stage is practically indefinite—the disease may be dormant for months and years and suddenly reveal itself by lesions the most profound, by local processes the most destructive.

There is no definite chronological limit which separates the second and third stages of syphilis—the distinction between the two is based rather upon the character of the pathological process than the age of the diathesis.

Certain secondary lesions. such as mucous patches, may continue to develop long after the accession of the tertiary stage, while severe lesions of the tertiary type may occur within a few months of the outbreak of general syphilis.

While there is no distinct line which divides the two stages, the more strongly marked characteristics of each may be thus formulated.

The secondary eruptions are generalized, symmetrical in development, superficial in character, affecting only the skin and mucous membranes, with a tendency to spontaneous resolution, leaving no scars.

The tertiary lesions are limited and localized, non-symmetrical, deeper seated, with a progressive and destructive tendency, producing more or less extensive loss of tissue, and leaving permanent scars.

Secondary symptoms in one form or another always follow a chancre, without them syphilis does not exist; tertiary symptoms are not inevitable--they occur only in a certain proportion of cases.

Secondary manifestations appear with a

certain order or regularity, and are limited in duration; after a certain period they disappear forever.

Tertiary accidents develop without order or regularity, it may be upon the completion of the secondary stage, it may be much later; they may continue to recur during the lifetime of the individual.

During the secondary stage, the blood, as well as the lesions, contain the poison of syphilis, they are inoculable and contagious, and the disease is transmissible by inheritance.

When syphilis has passed into the tertiary stage it ceases to generate an inoculable virus, neither the fluids nor solids contain the poison, the disease is no longer contagious or transmissible by inheritance.

CHAPTER XIII.

THE SYPHILITIC VIRUS. — ITS NATURE, SOURCES AND MODES OF CONTAGION

THE virulent principle of syphilis resides in the serous or sero-purulent secretions of the lesions which it causes.

No microscopic or chemical analysis reveals the essential character of the syphilitic virus; it cannot be isolated from the organic elements which contain it.

Our knowledge of its nature is limited to its effects upon the organism—the capacity of multiplying its germs and reproducing itself indefinitely by propagation from one individual to another, constitute its distinctive characteristics.

Recent investigators claim to have discovered in the blood and lesions of syphilitics a specific micro-organism which they assert is peculiar to syphilis and the source of its contagion.

While bacteriological researches have not absolutely demonstrated the bacterial origin of syphilis, it is probable that a specific microbe is the essential etiological factor.

The question of the susceptibility of animals to the action of the syphilitic virus still divides medical opinion.

Recent experiments in inoculating monkeys, pigs, etc., which are claimed to be successful, are nevertheless of doubtful authenticity, and the results must be received with reserve.

The sources of the syphilitic virus from which contagion is commonly acquired, are the secretions of the chancre, and the secretions of certain secondary lesions, more particularly mucous patches.

The blood of syphilitics is inoculable, and consequently contagious during the entire secondary stage; the same is probably true of the lymph.

At what precise period in the evolution of syphilis the blood becomes impregnated with the virulent principle, and at what moment it ceases to be contagious, is not definitely known.

It is probable that the blood loses this virulent property within three or four years from the beginning of constitutional infection.

It is not settled whether the menstrual fluid of a woman with a syphilis in full secondary activity can communicate the disease.

None of the physiological secretions are contagious, experiments of inoculating the milk, saliva, semen, etc., of syphilitics have invariably given negative results.

Why the same sperm, which cannot be inoculated, may infect a healthy ovule, and procreate a being saturated with syphilis, is one of the mysteries which science is unable to explain.

These secretions may be the accidental vehicles of the virus, as when the saliva of a syphilitic is mixed with the secretions of mucous patches in his mouth.

The pathological secretions of lesions, non-specific, but developing upon a syphilitic subject, while non-infectious, may serve as the passive medium of contagion.

Hereditary syphilis may be transmitted from the infected sperm of a syphilitic father, from the diseased ovule of a syphilitic mother, or from a combination of diseased states in both.

Syphilis may also be conveyed to a healthy fœtus from a syphilitic mother after conception, or from a syphilitic fœtus to a healthy mother (syphilis by conception).

The constant interchange of contaminated blood between the fœtus and the mother, through the medium of the utero-placental circulation, explains these modes of contagion.

The virulent principle of syphilis is not volátile, but fixed; it may be conveyed from one individual to another by either direct or mediate contagion.

When a lesion containing the syphilitic virus is brought into immediate contact with the genital or other parts of another individual, the poison is conveyed by direct contagion.

When the virus is transferred from one individual to another by any indifferent ob-

ject upon which it has been deposited, it is termed mediate contagion.

In order that syphilitic contagion be effected, two essential conditions are requisite: Contact of the virus with any portion of the cutaneous or mucous surface; a lesion of continuity for its entrance.

The breach of surface may be microscopic or imperceptible, but it must exist. If the epidermis or epithelium remain intact, contagion will not be effected.

The modes of syphilitic contagion are many. A knowledge of the numerous and varied processes by which contamination takes place, possesses the highest interest from a prophylactic point of view.

Syphilis is commonly acquired through direct inoculative contact of the genital parts in sexual intercourse.

It may originate entirely independent of the sexual act. From an etiological standpoint, syphilis is not necessarily a venereal disease.

Syphilis may be acquired from a mucous patch in the mouth in the act of kissing, the

nipple of a healthy nurse may be infected from mucous patches in the mouth of a syphilitic infant; the mouth of a healthy infant may be infected from a syphilitic lesion on the breast of a nurse.

The three most important centres of contagion are the genital and anal regions of both sexes, the buccal region in both adults and children, the mammary region in the syphilitic nurse.

As rarer examples of direct contagion may be mentioned digital chancres of the surgeon or accoucheur, from contact with syphilitic lesions, the bite of a syphilitic, the operation of skin grafting, dental transplantation, etc.

Any object upon which the syphilitic virus may have been accidentally deposited may serve as the medium of contagion.

Mediate contagion may be effected by means of spoons, cups, tobacco pipes, cigars, nursing bottles, children's toys, tattooing needles, towels, sponges, surgical instruments, the Eustachian catheter, the speculum, the razor, certain industrial occupations, as glass-blowing, etc.

A healthy person may act as the conveyor of the contagion without being infected; a man with a long prepuce may have intercourse with a syphilitic woman, and the poison of her secretions be carried to a healthy woman with whom he next cohabits, producing a chancre, the man remaining healthy.

A syphilitic man may deposit the virus in the vagina of a healthy woman, from which the next comer is inoculated, while the woman escapes infection.

Another mode of conveying the contagion of syphilis is by *vaccination*. The virus may be directly transferred from the arm of a syphilitic child to a healthy person, and develop a chancre at the point of inoculation.

It was formerly thought that the clear vaccine lymph could not be the vehicle of the virus, and that this mode of contagion was only possible where blood was drawn in collecting the lymph.

Recent experiments have demonstrated that the perfectly clear lymph of the vaccine vesicle from the arm of a syphilitic

subject, without the slighest admixture of blood, is capable of conveying syphilis.

Vaccino-syphilis may be derived from the vaccinee as well as the vaccinifer, when a number of individuals are vaccinated in succession, one of whom is syphilitic, the point of the lancet may be charged with his blood, and the next one in the series inoculated with syphilis.

CHAPTER XIV.

PRIMARY SYPHILIS—THE CHANCRE AND BUBO.

WHATEVER may be the mode of contagion in acquired syphilis, the first effect of the virus is constantly and invariably the same. It develops at its point of entrance a lesion of specific character, variously designated as the *chancre*, the *primitive neoplasm*, the *initial lesion*.

It is a universal law of the disease to which there is but one exception, that *every syphilis contracted after birth must have for its point of departure a chancre.*

The exception referred to is the infection of a healthy mother by a syphilitic infant during its intra-uterine existence, termed syphilis by conception, or *choc en retour*.

Syphilis transmitted from the parent to the offspring at the moment of conception, or at a subsequent period of its intra-uterine life, has no initial lesion or chancre.

Between the moment of inoculation and the first appearance of local symptoms, there always intervenes a certain period, termed the *incubation of the chancre.*

While it is not possible to fix the limits of this period with absolute precision, generally it may be said to average from three to four weeks, exceptionally it may vary from ten to seventy days.

The *chancre* first appears as a flat papule or a small tumor, which increases in size and hardness, the surface gradually becomes eroded or ulcerated, and furnishes a slight secretion, which dries into a scab or crust.

The term chancre, as implying a destructive action, is not strictly correct; the pathological process consists in an accumulation of new cell-elements, infiltrating the tissues and constituting a neoplasm or new growth.

The ulceration is usually at the expense of the new-formed elements rather than of the tissues proper. In most cases it remains superficial, it may become deeper, producing a cup-shaped depression, or excavated ulcer.

Induration constitutes the specific mark

of the primary lesion—it varies from a parchment like thickening to a woody or cartilaginous hardness, giving the sensation, when grasped between the fingers, of a hard nodular body set into the skin.

After a variable time, the cellular elements undergo fatty resolution, the ulcerated surface granulates, and cicatrization takes place.

In a majority of cases the chancre heals and leaves absolutely no trace, except a pigmented spot which gradually disappears; when the deeper layers of the skin are implicated, a scar remains permanent.

The induration is sometimes slow in receding, it may remain or even continue to increase, after cicatrization of the lesion has taken place.

After its complete involution, it may redevelop months later in the cicatrix, with ulceration, presenting all the characteristics of the primary lesion.

While the fundamental features of chancre are always the same, it varies in form, dimensions, extent, and depth of ulceration,

and the degree and character of induration present.

Diversity in form is often determined by the anatomical peculiarities of the tissues upon which it happens to develop.

The physiognomy of a chancre may also be modified by the intercurrent processes of inflammation, phagedæna, gangrene, etc.

Clinically the most common varieties are the following: the superficial erosion, the exulcerative chancre, the excavated ulcer, the herpetiform chancre.

The *superficial erosion* is usually oval or circular, the surface raw, sometimes covered with a thin, yellowish-gray or opaque pellicle, suppurating slightly or not at all, with a thin serous or sero-sanguinolent secretion, induration not well-marked.

The *exulcerative chancre* differs from the former only in the degree of ulceration which is still superficial, the edges of the ulcer are adherent and sloping, the discharge sero-purulent or bloody.

The *excavated ulcer* or Hunterian chan-

cre is characterized by a deeper ulcerative action, resulting in a crateriform or funnel-shaped ulcer with hard prominent border, the induration of a woody or cartilaginous character.

The *herpetiform chancre* consists of a cluster of vesicles closely resembling herpes progenitalis; the vesicles, instead of drying up and disappearing, run together, the base of the ulcer thus formed takes on the characteristic induration.

The *mixed chancre* presents the characteristics of both chancroid and chancre, the base of the ulcer becoming specifically indurated—there is no union, but simply an association or co-existence of the two viruses.

As rarer forms of the initial lesion may be mentioned *infecting balano-posthitis*, in which the mucous membrane of the prepuce presents a deep-red color, is thickened and slightly excoriated, the induration is broad and uneven, and not strictly defined.

The *dry papule*, which presents itself as a flattened rounded protuberance of a brownish-red color, the surface is not eroded,

and is sometimes covered with whitish scales.

Diphtheroid of the glans presents an altogether anomalous appearance, and is so exceedingly rare as not to merit special description here.

Chancres in the female are not modified in their essential characters; from their situation upon parts concealed from observation, their indolent and painless character they often pass unperceived by the patient.

The erosive form is much more common, the induration is much less marked, and generally of the parchment variety.

They are most frequently developed upon the labia and on the fourchette, extremely rarely upon the vaginal walls, but not infrequently upon the cervix uteri.

When situated upon the inner surface of the labia, or on surfaces in contact, and kept moist by the natural secretions, they are frequently transformed into mucous patches or condylomata lata.

The initial lesion is commonly unique;

multiple chancres are, however, by no means rare; they may be grouped in the same region, or be disseminated over different portions of the body.

Multiple chancres are almost always due to the simultaneous inoculation of a number of rents or abrasions; they are not produced by successive inoculations, as in the case of chancroid.

The *non-auto-inoculability of the chancre* is a rule to which there are few exceptions, and these only possible when inoculation is performed at an early period after the appearance of the chancre; the result is usually an abortive pustule.

The seat of the chancre is determined altogether by conditions of contact; while in the large majority of cases the chancre is situated upon the genital parts, extra genital chancres are comparatively common.

Ubiquity is one of the distinguishing characteristics of chancre as compared with chancroid. There is no portion of the external integument which resists the action of the syphilitic virus.

Likewise every portion of the mucous

surfaces accessible to contact may be the seat of the infection, as the lips, tongue, tonsils, the conjunctival, nasal, urethral, and anal mucous membranes.

The three regions which may be regarded as centres of predilection are the genitals, the mouth, and the breast, simply because these parts are most frequently brought into immediate contact in the ordinary relations of life.

Bubo.—Another phase of the primary stage of syphilis is marked by the indolent enlargement of the nearest lymphatic glands in the region of the chancre.

The course of the virus in its passage along the lymphatic vessels to the glands may sometimes be traced in the form of thickened, nodular and rigid cords, constituting the so-called *lymphangitis* of syphilis.

Induration of the lymphatic ganglia is the most constant, and, from a diagnostic point, the most valuable sign of syphilitic infection.

The beginning of this process is generally

in the first, or early in the second week after the appearance of the chancre.

The glands nearest the chancre, whatever its situation, are always the first involved; when on the genitals, the inguinal glands; when on the lips or the tonsils, the sub-maxillary glands; when on the breast, the axillary glands, etc.

Usually one gland is first affected, later a number of contiguous glands undergo the same process, forming a chain or pleiad, one or two more voluminous than the others.

The bubo of syphilis is firm, easily movable underneath the skin, not painful on pressure, and without inflammatory complication, rarely suppurates, is slow in involution, persisting for months.

The three specific characters of *mobility, hardness, and indolence*, serve to distinguish them from any other morbid process, and stamp them as the unique product of syphilis.

CHAPTER XV.

DIAGNOSIS, PROGNOSIS, AND TREATMENT OF THE CHANCRE.

DIAGNOSIS of the initial lesion of syphilis is often a matter of extreme difficulty, and is not possible at an early date, before it has become the seat of induration.

As time passes, the induration becomes more pronounced, other specific characters are developed, and the difficulties of diagnosis diminish.

The three most important elements upon which the diagnosis of a chancre is based, are *the period of its incubation, induration of its base, and specific induration of the neighboring ganglia.*

Notwithstanding the great diagnostic importance of these signs of syphilis, they may each have a deceptive significance.

The patient's statement as to the date of

infection may be misleading; the induration may be inflammatory; the glands may be sympathetically swollen.

So many sources of error are possible, that the most practised physician cannot always pronounce positively upon the syphilitic character of a venereal sore until the appearance of general accidents.

A chancre may be mistaken for a *simple erosion*, or any indifferent lesion accidentally developed upon the cutaneous or mucous surface; this is especially true of the extra-genital chancre.

The persistence of the lesion for some time under the same form, especially if attended with induration, indolent swelling of the nearest lymphatic glands, affords presumptive evidence of its specific nature.

Herpes progenitalis may be confounded with chancre. In herpes, the vesicles occur in clusters, they are more numerous, more superficial, and have a soft base; they have a comparatively short duration, and disappear spontaneously.

In herpetiform chancre, the contour of the lesions is more annular, the base always be-

comes indurated, the border thickened and prominent, and the characteristic inguinal adenopathy invariably follows.

Chancre must also be differentiated from a *furuncular lesion* beginning as a hard nodule, especially upon the female genitals. A *commencing epithelioma* may be mistaken for chàncre.

In the vast majority of cases when a patient presents himself with a sore upon the genitals, the diagnosis lies between *chancre and chancroid.*

From a prognostic point of view, the differential diagnosis between these lesions possesses a capital importance.

The one is a purely local affection, whose pathological action is limited to a narrow lymphatic circle, the other is the local expression of a constitutional disease, the first in the series of a long train of pathological phenomena.

In order to bring the clinical features of chancre and chancroid into prominent relief for purposes of comparison, their distinctive characteristics may be thus formulated.

The incubation of chancre varies from twenty to thirty-five days, never less than ten days, rarely more than forty; chancroid has no period of incubation.

Chancre makes its appearance as a papulo-tubercle, which afterwards becomes eroded or ulcerated; chancroid begins as a vesico-pustule or an open ulcer.

The chancre, when fully developed, is a superficial, rarely deep ulceration, its edges sloping and adherent, its base smooth, often partly covered with false membrane.

The chancroid is a deep, punched out ulcer, its edges perpendicular or undermined, its floor uneven, worm-eaten, grayish, constantly bathed in a thick pus.

The secretion of the chancre is scanty, serous, or sero-sanguinolent, sometimes purulent, but not auto-inoculable; the secretion of the chancroid is abundant, purulent, and readily auto-inoculable.

The induration of the chancre is usually firm, nodular, cartilaginous, sometimes parchment-like, sharply defined, like a hard body set into the skin.

The chancroid has a soft, supple base, the inflammatory engorgement, sometimes factitiously developed by irritation, is not circumscribed, but shades off into the surrounding tissues, and is of temporary duration.

The bubo of chancre is almost invariable: the glands, several in number, are hard, indolent and movable, and rarely suppurate: the bubo of chancroid occurs in but $33\frac{1}{3}$ per cent of cases; the gland, usually but one, is inflamed, painful, often suppurates, and may furnish a chancroidal pus, also inoculable.

Chancre is most often single, when multiple, they appear simultaneously; chancroid is often multiple, *most* often in women, and new ulcers develop from successive inoculations.

Chancre, while usually occurring upon the genitals, is not uncommon upon other portions of the cutaneous and mucous surfaces; chancroid has for its almost exclusive seat the genital region and contiguous parts.

Chancre originates from the secretions of a chancre, a secondary lesion, or the blood

of a syphilitic; chancroid is derived from the pus of chancroid, a chancroidal bubo, or lymphitis.

Confrontation, when practicable, certainly affords a valuable indication, but its trustworthiness is impeached in all cases where promiscuous intercourse has been indulged.

Notwithstanding the salient points of difference in the typical forms of the two sores, there are so many possibilities of error that the prudent physician will hold his opinion in reservation.

However strongly the clinical probabilities point in favor of the chancroidal character of a venereal sore, the physician is not justified in positively assuring his patient that it will not be followed by constitutional accidents.

PROGNOSIS.—The prognosis of the chancre viewed in the aspect of a local lesion, is always favorable; considered as the first visible manifestation of a disease permeating the entire organism, capable of determining the most profound lesions and of practically indefinite duration, the prognosis is of much graver import.

As a local process the chancre is limited in extent and duration, with a tendency to spontaneous resorption and healing, generally, without a cicatrix.

When complicated with phagedæna, gangrene, phimosis, or other inflammatory conditions, the local consequences may be more serious, such as extensive loss of tissue, mutilation of the glans, urethral fistulæ, etc.

The relations between the source of the virus, the period of incubation, the anatomical characters of the chancre, etc., and the ulterior evolution of the disease are interesting from a prognostic point of view.

The source of the contagion, whether from a primary or a secondary lesion, whether from a simple erosion or a deep ulceration, exerts no appreciable influence upon the characters of the primary sore or the severity of the constitutional accidents.

The old idea that the virus derived from a phagedenic chancre was more intense in its activity and more severe in its effects upon the system is unfounded. Phagedenism is a property of the individual and is not transmissible.

Certain authorities have formulated the ollowing rule: the longer the incubation, the milder the syphilis, and the shorter the incubation, the severer the syphilis, on the principle that the more prompt invasion shows a feebler capacity of resistance on the part of the individual.

The relation between the period of incubation and the effects of the virus upon the system is by no means constant. Clinical experience furnishes so many exceptions to this rule, that its prognostic significance is of little value.

Chancre has been termed "the touchstone of the constitution," and the local action of the virus upon the tissues, revealed in the primary lesion, constitutes, it is claimed, a correct criterion by which to estimate its general effects upon the system.

In general, it may be said, that the more benign the chancre, the greater the probability that the secondary accidents will be superficial and of mild type.

While there is a certain correspondence between the character of the chancre and the earlier eruptive accidents, the initial

benignity of the disease confers no guarantee against the malignity of tertiary manifestations.

It has been observed that severe tertiary syphilis, with determination to important central organs, as the brain and cord, frequently follows a local lesion so insignificant as to pass unperceived by the patient.

On the other hand, a severe primary lesion, with a voluminous induration, may be followed by general accidents of mild or of medium severity.

The anatomical characters of the chancre, its induration, ulceration, and attendant adenopathy, do not furnish infallible signs which enable us to forecast the subsequent course of the disease.

A phagedenic chancre always portends a bad type of syphilis, since the phagedæna is an expression of a depraved state of the patient's constitution, which will be reflected in the character of the general accidents.

The prognosis of chancre occurring in persons in the extremes of life, in the intemperate, in persons exposed to privation and

bad hygienic surroundings, in lymphatic and scrofulous individuals, is always of graver import.

TREATMENT.—The question whether it be possible, by destruction of the initial lesion, to prevent constitutional contamination is most important from a prophylactic point of view.

The opinion is held by many authorities that it is possible, by excision of the chancre, to destroy the virus at its point of entrance and thus abort syphilis.

It is further claimed that, when total destruction of the chancre is not effected, by removing the mass of infective material contained in the chancre, the severity of its constitutional effects is modified.

The local or constitutional nature of the primary sore, and the time at which generalization of the virus takes place, have an important bearing upon the value of the abortive method.

If the virus remain localized at its point of entrance, its first effect being limited to the development of the chancre, from which, as an infecting source, general contamina-

tion gradually take place, it is possible, by removal of the depot of the virus, to prevent its diffusion through the system.

If, on the other hand, the chancre be the local expression of a general blood-poisoning, the evidence of an already accomplished infection, it is not possible to arrest or modify its effects upon the system.

Deductions drawn from analogies with the action of the contagia of other infectious diseases, of vaccine virus, animal poisons, etc., render it probable that absorption of the syphilitic virus begins immediately upon its introduction beneath the epidermis.

The chancre is not the source, but the sign of constitutional syphilis. Constitutional infection takes place before the appearance of the chancre.

Leaving theoretical considerations aside, the determination of the value of the abortive method has been settled by the test of clinical experience. The practice of excision of the chancre is condemned by its results.

It fails to prevent constitutional infection, it is often followed by a relapsing

induration of the wound, it does not materially modify the intensity or severity of the general symptoms.

The indication for its employment is limited to cases in which conjugal or other relations demand the speedy suppression of a source of contagion.

The alleged advantages of cauterization of the primary sore are purely illusory; the use of caustics almost always tends to increase the volume of the induration and retard the healing of the ulcer.

The chancre has a tendency to heal spontaneously. In the majority of cases, expectant treatment is alone necessary.

The indications in the treatment of uncomplicated chancre may be summed up as follows: rest, cleanliness, the removal of local causes of irritation, and a simple protective dressing of lint.

When there is a tendency to suppurative action, mild astringents, the use of black wash, dusting with calomel or iodoform may be necessary.

When the chancre is painful, the use of

sedative lotions, as the lead and opium wash, will be found beneficial.

In inflammatory conditions with a tendency to gangrene, solutions of carbolic acid, permanganate of potash, chloride of zinc are of service; the employment of the actual cautery is rarely necessary.

Chancres in particular situations, as in the meatus, are best treated with bougies of iodoform, or tents smeared with mercurial ointment.

The voluminous indurations which sometimes remain, even after cicatrization, are removed by the unaided efforts of Nature alone; their involution may be hastened by the internal employment of mercury

The induration of the lymphatic ganglia rarely requires treatment. When they become painful from peri-glandular inflammation, the use of mercurial ointment to induce resolution is of service.

CHAPTER XVI.

SECONDARY SYPHILIS.

GENERAL CHARACTERISTICS OF THE SYPHILIDES.

THE interval which elapses between the appearance of the chancre and the eruption of general accidents is termed the *period of the second incubation*, or the incubation of constitutional syphilis.

The term "constitutional" in this connection is employed with a clear appreciation of the fact, that contamination of the blood probably takes place long before the appearance of general symptoms.

During the period of secondary incubation, on the average from six to seven weeks, the virus multiplies in the system, until its accumulated force and energy culminate in the explosion of secondary accidents.

The *eruptions* upon the skin and mucous membrane are generally preceded by

changes in the blood, febrile reaction, and other evidences of constitutional trouble.

An examination of the blood discloses the fact that there is an increase of the white corpuscles and albuminous constituents, with a diminution in the number of the red corpuscles.

This modification in the relative proportion of the corpuscular elements is not due to the direct action of the syphilitic virus upon the globules, but rather to its poisonous influence upon the hematopoietic organs.

It is not known at what precise time this alteration in the constituents of the blood begins. Its symptoms do not differ essentially from those of chloro-anæmia from other causes.

Prominent among the prodromal symptoms which announce the outbreak of general syphilis is the syphilitic fever, which may be accompanied with headache, pain in back and limbs, and other signs of constitutional disturbance.

Syphilitic fever is probably due to the impression of the poison upon the nervous system; it is much more common in anæmic

women, and persons of a delicate and highly wrought nervous organization.

The febrile reaction of syphilis has no well-defined characters which can be considered as specific: it varies in type, intensity, and duration.

It may present itself with the characters of an intermittent, remittent, or continued fever; when attended with pain in the muscles and joints, it may simulate very closely an acute articular rheumatism.

Syphilitic fever rarely possesses clinical importance, it does not readily respond to the use of quinine, or other agents, it usually subsides spontaneously with the appearance of the eruptive accidents.

There are numerous other symptoms of a subjective character, which are liable to occur in the early stage of syphilis, such as pains in the muscles, tendons, bones, etc.

These pains are remarkable for their capricious development, their tendency to shift from one part to another, their paroxysmal character, but chiefly for their tendency to nocturnal exacerbation.

Rheumatoid pains, especially marked in certain groups of muscles, giving rise to torticollis, pleurodynia, lumbago, pains at the tendinous insertion of the large muscles, are common at this period.

It is plainly within the sphere of the nervous system that we must look for an explanation of these morbid effects, probably from the direct action of the poison through the blood upon the nerve tissues.

The various algias, such as cephalalgia, sternalgia, arthralgias, etc., are more liable to occur in women, and persons of nervous temperament.

Cephalalgia is one of the most constant symptoms, it may occupy the entire cranium, or it may be circumscribed in the frontal, temporal, or occipital region; it is always worse at night.

Arthralgias are especially marked in the large articulations, as the shoulder, elbow, and knee joints. The pain is superficial rather than deep-seated.

Osteocopic pains along the prominent parts of the bony skeleton may mark the period of invasion of syphilis, although they

are more pronounced at a later stage, and accompanied with the objective signs of periostitis or ostitis.

The eruptions upon the skin and mucous membranes produced by syphilis are termed *syphilides*. They are important as constituting the first visible evidences of complete saturation of the system with the poison of syphilis.

While the lesions of syphilis consist of the same eruptive elements as are met with in other cutaneous diseases, yet they possess certain peculiarities which enable the practised physician to recognize at a glance their origin and nature.

These peculiarities relate to their polymorphism, color, pigmentation, configuration, grouping, the character of the scales, crusts, cicatrices, absence of pain, or other subjective symptoms.

Polymorphism constitutes a distinctive feature of syphilitic eruptions. In no non-specific disease of the skin is this peculiarity developed to the same extent, and with the same frequency.

Most dermatoses are characterized by a

typical eruptive form, while in syphilis there may be a multiplicity of eruptive elements present at the same time.

This feature is determined by the chronic sluggish character of the syphilitic process, permitting the development of new crops of eruption before the involution of old ones, the tendency to relapses, and the modification which the same lesion undergoes in the different stages of its development.

The *color* of syphilitic eruptions is highly characteristic, and has been variously described as a yellowish-red, a dirty brown, a raw ham or coppery color. It varies with the age of the lesion, the complexion of the individual, and other circumstances.

In the earlier, more acute stage, the efflorescence presents a bright-red or pinkish coloration; at a later stage of its evolution, it takes on the raw ham or coppery tint.

The *pigmentation* left by a syphilitic lesion possesses little diagnostic value. It is due to the escape of the normal pigmentary matter of the blood into the Malpighian layer, and its subsequent metamorphosis;

the same result may follow any long-continued congestion.

The *symmetry* of the earlier syphilitic eruptions is characteristic, the lesions on one side of the median line often being an exact reproduction of those of the other; the tertiary lesions are non-symmetrical, though frequently both-sided.

Grouping.—Syphilitic eruptions manifest a tendency to develop in curved lines forming circles, arcs or segments of circles, the annular configuration being determined no doubt by the anatomical arrangement of the cutaneous capillaries.

This grouping of the lesions is not so marked in the earlier eruptions, but later, the crescentic, serpiginous, and horse-shoe shapes which they assume, constitute a characteristic feature.

Location.—The earlier eruptions of syphilis, like the exanthemata of other blood poisons, may be distributed over the whole surface of the body, yet each eruptive form manifests a predilection for certain regions.

The erythematous eruption is most characteristically developed upon the chest,

trunk, and flexor surfaces; the papular syphilide upon the face, brow, margin of hairy scalp, neck, back, and limbs; the squamous syphilide upon the palmar and plantar surfaces; the pustular syphilide upon parts covered with hair.

The ecthymatous eruptions most commonly affect the limbs, principally the lower; tubercular lesions are found everywhere. Of the entire surface of the body, the dorsal surfaces of the hands and wrists, the clavicular and scapular regions are most rarely involved.

Mucous patches have a preference for the natural orifices, the isthmus of the throat, the commissure of the lips, the nasal, vulvar, and anal orifices.

The *scales* of syphilitic lesions are usually grayish, more superficial, less abundant, less glistening, less adherent than in other lesions.

The *crusts* of syphilitic sores are grayish, greenish, brownish or black; they are thick, rough, laminated, and adherent; the conical stratified crusts of rupia are met with in no other disease.

The *cicatrices* following syphilitic ulcerations are first pigmented, afterwards this coloration disappears, leaving a smooth white scar. The form and depression reveal the character of the ulceration which gave rise to it.

The *apruriginous character* of a syphilitic eruption is a distinctive feature. The patient may be unconscious of its existence, so far as subjective sensations are concerned.

CHAPTER XVII.

THE SYPHILIDES.

In the evolution of syphilis, the different eruptions develop at different epochs and in a certain order of succession, so that the age of the syphilis may generally be determined by the form and aspect of the eruption.

THE ERYTHEMATOUS SYPHILIDE.

The *erythematous* syphilide is the earliest and most common of the secondary manifestations. It usually develops from seven to eight weeks after the appearance of the chancre.

This eruption, variously designated as the *macular syphilide*, *roseola syphilitica*, *erythema syphiliticum*, etc., probably occurs in all cases, yet since it is habitually seated upon parts covered by the clothing it may escape observation.

It usually appears in the form of rounded

or oval spots, one-eighth to one-third of an inch in diameter, the color at first bright-red or pink, and disappearing upon pressure; but later it deepens into a yellowish-brown pigmentation unaffected by pressure.

The spots vary in number and degree of coloration, sometimes they are few and scattered, at other times thickly disseminated like the macules of measles, sometimes they are faintly visible, giving the skin a marbled aspect, at other times they are vividly prominent.

Syphilitic roseola usually lasts several weeks, exceptionally it may disappear after two or three weeks, or it may gradually merge into the papular form; the papules minute, slightly elevated, seated upon an erythematous base, and covered with fine desquamating scales.

It may recur a number of times in the course of the first year, or even during the second year of the disease. With each recurrence the spots are larger, fewer in number, somewhat paler, and have a tendency to assume an annular form.

The erythematous syphilide may be con-

founded with rubeola, with the erythema of copaiba, mercury and other drugs, with tinea versicolor and tinea circinata.

The differential diagnosis usually presents few difficulties; the history, the mode of invasion, presence of enlarged glands, absence of itching, gastric disturbance, and other symptoms peculiar to these diseases, will indicate the specific character of the eruption.

THE PAPULAR SYPHILIDE.

The *papular* syphilide, in the extent of its distribution, the variety of its lesions, its prolonged continuance, and its pathological significance, is the most important of the secondary eruptions of syphilis.

It may immediately follow, or develop coincidently with the erythematous form, it often merges by insensible gradations of papulo-tubercles into the tubercular form; it may continue to recur during the entire secondary stage, and may lap over into the tertiary stage.

The eruption consists of distinctly circumscribed solid elevations, from the size

of a pin-head to that of a pea, sometimes very much larger, the surface at first smooth, afterward desquamating, forming a sort of collar of broken, partly detached epidermis around the periphery.

According to their form, volume, and other objective characters, the lesions have been classified as follows: the miliary papule, the lenticular or flat papule, the squamous papule, the mucous patch.

There are two varieties of the *miliary papular syphilide*. In one the papules are minute—pin-head sized, conical or pointed, grouped in circles or segments of circles. In the other, the papules are larger—not arranged in groups, not so abundant as the smaller variety.

The course of this eruption is usually chronic. It may persist several weeks or months, without notable modification. Relapses are apt to occur, and it is not readily influenced by specific treatment.

In the *lenticular variety*, the papules are rounded or oval, but slightly elevated—the lesion gaining in superficial extent what it loses in height. The surface, at first smooth

and flattened, presents later a depression in the centre, the desquamating epidermis forming a fringe at the periphery.

In certain localities, more particularly upon the face and scalp, the papules may attain the dimensions of a twenty-five or fifty-cent piece. The surface is elevated at the margin from an effusion of serum, giving it an umbilicated appearance quite characteristic.

The development of these papules upon the brow and margin of the hairy scalp constitutes a peculiar feature known as the "*corona veneris.*"

Upon the palms and soles, the papular syphilide presents certain modifications, due to peculiarities of anatomical structure, such as the thickness and resistance of the epidermis.

It may develop as small, hard concretions, which can be dug out, leaving small crateriform depression; or there may be a circular loss of tissue, corresponding to each papule, which gives it the appearance of being punched out with an instrument.

The *papulo-squamous variety*, in the form

of solid patches of infiltration with extensive desquamation, is most frequently found upon the palmar and plantar surface, although it may occur upon other regions.

A single papule may gradually enlarge, or several papules may coalesce, forming diffuse patches, usually crescentic or circinate in form, with a tendency to heal in the centre while advancing at the periphery.

The patches of squamous syphilide sometimes closely resemble psoriasis or chronic eczema. They are to be distinguished by the character of the scales, the sweeping, circinate form, and the coppery-colored wall of infiltration which marks the advancing border.

The *palmar and plantar syphilides* are distinguished by their continued development in an advanced stage of the disease; their tendency to relapse, and their obstinate and refractory character, being little influenced by specific treatment.

The *mucous patch or flat condyloma* is found where the skin is delicate, or in the natural creases where contiguous surfaces come in contact. The epidermis becomes

macerated, the surface moist, and there is a transformation of the dry into the moist papule.

Moist cutaneous papules may occur upon the genital and anal regions, the breast of the female, the nates and groin, between the toes—wherever the skin is fine and humid; they are laden with the poison of syphilis and are ultra-contagious.

Condylomata often develop exuberantly, and form, by their confluence, patches of large size. The surface may be smooth or nodulated, and is usually covered with a most offensive discharge.

THE PUSTULAR SYPHILIDE.

The *pustular* syphilide usually represents an advanced stage of the papule. In some cases pustulation occurs so rapidly that the primary papular form is not distinguishable. Exceptionally the eruption may begin as distinct pustules.

When miliary papules are developed in connection with the follicles of the skin, they may become transformed into acuminate pustules, the contents drying in the

form of small crusts. Through the centre of each a hair usually protrudes.

Three varieties of the pustular syphilide are described : the acneiform, the impetigo-form, and the ecthyma-form.

The lesions vary in size, and may be acuminate, rounded, or flat. The base is infiltrated, and surrounded by a coppery areola.

In the *acneiform syphilide*, the follicular structures are affected. Suppuration takes place within the follicles, producing variously-sized pustules seated upon a reddened, infiltrated base. The lesions bear a marked resemblance to the pustules of acne vulgaris.

The favorite seat of this eruptive form is the forehead, scalp, back of neck, shoulders. buttocks, and the outer aspect of the limbs. The pustules commonly leave small brown spots which are slow in disappearing; sometimes cicatrices.

The other forms of pustulo-crustaceous syphilide do not have a follicular origin. The pustules are more superficially seated underneath the epidermis. They have a

predilection for parts where the skin is tender and delicate, affecting the flexor rather than the extensor surfaces.

The *impetigo-form syphilide* is a flat, superficial pustule, the exudation quickly drying into a greenish-brown adherent crust, which leaves upon its removal an uneven surface. Not infrequently the crustaceous pustules run together and form patches.

The *ecthyma-form syphilide* is the most important of the pustular group. It may be superficial or deep. The latter is usually a late manifestation, except in malignant precocious syphilis.

The ecthymatous syphilide may be described as a slight elevation of the epidermis by a turbid, cloudy fluid, which quickly desiccates, forming a dark-brown scab, beneath which ulceration, more or less deep, takes place.

In the deep variety, the ulcerations are more extensive and profound, sometimes assuming a serpiginous form, the edges of the ulcer are punched out or excavated, frequently the crust does not entirely cover

the ulcer, but is surrounded by a ring of ulceration.

The suppuration of ecthyma is usually profuse and of long duration; after healing, there remains a brownish spot, which fades into a white cicatrix, and is for a long time surrounded by a coppery areola.

The term *rupia* is applied to an accumulation of dirty brown, distinctly laminated, conical-shaped crusts, covering a flat superficially ulcerated surface.

There is no well-grounded distinction between ecthyma and rupia, except that the ulceration of the latter is more superficial, and its secretions contain a larger admixture of blood, giving the crusts a dark-brown or black color.

The lesion usually begins as a vesico-pustule which becomes scabbed over; as the ulcerative process extends at the periphery, the crust is thickened by the addition of successive layers from beneath, each layer giving it a broader base, while increasing its height. In this way the crust, conical or oyster-shell shaped, may rise an inch or more above the surface.

The number of lesions is usually in inverse proportion to their size. The cicatrices are permanent, and correspond in outline to the ulcerative process, which may travel over extensive tracts of skin, converting it into cicatricial tissue.

Rupia may be ranked as a late secondary accident. In cachectic or debilitated persons, it may develop within the first six months, when it is usually associated with other evidences of malignant precocious syphilis.

THE TUBERCULAR AND GUMMOUS SYPHILIDE.

The *gumma* is the lesion *par excellence* of tertiary syphilis; it constitutes the latest and the deepest of the cutaneous manifestations.

The *tubercle* is a small gumma developed in the deeper layers of the skin and mucous membranes; it does not extend into the subcutaneous tissues.

The *tubercular syphilide* consists of small rounded tumors of a brownish-red color, varying in size from a pea to that of a hazel-nut; they may be either localized or disseminate, discrete, or confluent.

There are two varieties of tubercles, the

dry or atrophic, and the ulcerative; in the former, resorption occurs without ulceration, in the latter, disintegration and ulceration rapidly take place.

The *dry or atrophic variety* may develop comparatively early; its favorite locality is on the face, shoulders, and backs of arms; it may be quickly disseminated over the entire surface of the body.

Tubercles occurrring upon the face and brow are often numerous and prominent, of a port wine or violaceous color, and with the accompanying thickening of the skin, give rise to the appearance known as *leontiasis.*

The course of the eruption is exceedingly slow; resorption occurs gradually, leaving pigmented cicatrices, without any ulcerative process having taken place.

The *tuberculo-ulcerous syphilide* may develop any time from the third to the fifteenth or twentieth years of the disease, or even later.

The lesions of the ulcerative variety do not at first differ essentially in form and volume from the preceding; later the tu-

mors undergo a process of softening, break down, and become converted into open ulcers, discharging a grayish-yellow gummy-like matter, which dries into dirty yellow or blackish crusts.

The cavity left by this loss of substance tends to enlarge, healing at one point and extending in another, often assuming a horse-shoe or kidney shape.

This form of tubercular syphilide often perforates the cartilaginous structures, and occasions necrosis of the bones of the nose, causing a breaking down and falling in of that organ.

Gumma is a product peculiar to syphilis. It consists of a rounded, sometimes flattened, circumscribed tumor, developed in the subcutaneous or submucous tissues, and in the muscles, bones, and internal organs.

The nodules or tumors vary in size; when deeply seated or flattened, they may cause no projection above the surface; they are freely movable, indolent, and insensitive to pressure.

The gumma may be gradually absorbed

without ulceration, or, as is most frequently the case, it becomes attached to the surrounding tissues, softens in the centre, perforates the skin, and the morbid products, consisting of a thick honey like material, are evacuated.

The ulcer thus left is a circumscribed deep excavation, the edges thickened, the floor uneven, and covered with the débris of the disintegrated tissues.

Phagedenism rarely occurs; the reparative process is usually prompt and complete, resulting in a cicatrix corresponding to the depth and extent of the destructive process; the cicatrix is often depressed and adherent to the parts beneath, especially when situated over a bone.

Serpiginous syphilides, causing extensive loss of tissues, involving subcutaneous structures, muscles, and bones, may have their origin in pustulo-crustaceous, tubercular, or gummous lesions.

The ulceration, at first circular, may become reniform or gyrate, spreading over large tracts of skin. Its extension is determined by the course of the infiltration which

advances at one portion of the circumference, while cicatrization occurs at another.

In the neighborhood of joints or the natural orifices, the cicatricial contraction may result in loss of motion of the joints or stenosis of the orifices.

THE PIGMENTARY SYPHILIDE.

This affection, variously designation as the "*pigmentary syphilide*," *the* "*dappled syphilide*," "*leucoderma syphiliticum*," is one of the rarer cutaneous expressions of syphilis, and has only been comparatively recently recognized.

It may occur directly after the roseola in the early secondary stage, or as late as the third year; it is much more common in women than in men; from this fact, and the peculiarity of its location, it has been termed the "necklace of Venus."

Its favorite seat is on the sides of the neck, sometimes on the back of the neck and shoulders; it very rarely occurs upon the face or extremities.

It consists of irregularly rounded circles

or islets of a brownish color, varying in size from that of a three-cent to a fifty-cent piece, isolated or confluent, not elevated above the surface, and not desquamative.

The true character of the pigmentary syphilide has not been definitely determined; it is probably due to some localized abnormality in the distribution of the pigment matter, producing a loss of pigment in the spots and a hyperchromia of the intermacular spaces.

The duration of the pigmentary syphilide is usually prolonged, it may persist for months or years, it is apparently uninfluenced by specific treatment.

CHAPTER XVIII.

SYPHILIS OF THE MUCOUS MEMBRANES.

SYPHILIS produces lesions of the mucous membranes analogous to those of the skin; they are modified in their forms and processes by the anatomical conditions of the soil upon which they develop.

The earlier lesions are superficial and resolutive, without destruction of tissue; the later are deeper seated, chronic in character, and may lead to extensive loss of tissue.

Erythema of the mucous membranes of the mouth and throat often develops coincidently with the cutaneous eruption of the same character.

It consists of a slight blush or redness, usually most marked upon the arches of the palate, the tonsils and posterior wall of the pharynx, and may extend to the larynx; the hyperæmia is diffuse rather than cir-

cumscribed, it may resemble catarrhal angina.

The *mucous patch* is the exclusive product of syphilis, and is therefore pathognomonic. Of all the constitutional signs of the disease it is the most characteristic and constant in its development. Syphilis may produce no lesion of the skin; it rarely happens, however, that the mucous membranes escape its action.

It derives an additional importance as constituting the most common and active source of syphilitic contagion. In the immense majority of cases, the secretion of this lesion is the agency by which syphilis is propagated from one individual to another.

The mucous patch is a papule occurring upon the mucous membrane. It may develop coincidently with the erythema of the throat, or later, in connection with the papular syphilide of the integument; its chronological limit is indefinite.

While it is superficial in character and of short duration, it reappears with surprising facility, its tendency is to repeatedly recur

during the first two years, sometimes as late as the fourth or fifth year of the disease.

The typical lesion may be described as a flat or slightly raised patch, of a cloudy or grayish-white color, formed by the thickening of the epithelium over a reddened infiltrated surface.

It may consist of a single rounded spot, or it may be a large irregular surface, formed by the confluence of several patches. Its appearance varies according to its location.

It may be found upon the mucous membranes of the mouth, nose, throat, and larynx, the genital mucous membranes of both sexes, the orifice of the anus; it does not occur upon the vaginal walls, but is found upon the vaginal portion of the os uteri.

In women they are most common about the vulva and around the anus, in men their greater frequency within the mouth is probably caused by the more constant exposure to the irritating contact of tobacco and alcohol.

Upon the buccal mucous membrane and the arches of the palate, the patches present a white opaline appearance, as if the membrane had been touched with a crayon of nitrate of silver; the surface may be pseudo-membranous, or slightly erosive.

Upon the *dorsum of the tongue*, the lesions occur in the form of circular or oval patches, the surface smooth as if shaven, which enlarge at the periphery while healing in the centre, and may thus assume an annular or horseshoe shape.

At the *tip and sides of the tongue* they are not rounded in outline, but occur in the form of fissures or furrows which may become converted into small superficial ragged ulcers.

The *tonsils* are frequently the seat of mucous patches, which at first present the bluish-white coating of the opaline patches, but later they are apt to become disintegrated, forming superficial or deep ulcerations.

Occurring at the *angles of the mouth* the patches are often complicated with fissures; they may be continuous with papules of the cutaneous surface, the mucous and

cutaneous segments of the lesion each presenting its distinctive appearance.

Upon the labia, mucous patches are circular or oval, presenting after desquamation a red, shining, moist appearance, sometimes they are covered with a grayish false membrane, quite adherent, which, upon removal, leaves a bleeding surface, but rapidly reforms.

Vulvar mucous patches are sometimes situated upon a raised and indurated base, constituting what is known as the hypertrophic variety; they may be transformed into vegetating condylomata.

The *tertiary lesions* of the mucous membranes consist of the same histological formations as are met with in the cutaneous lesions of this period; like the later syphilodermata, they are limited and localized rather than superficial and extensive.

They are characterized by tubercles and gummatous deposits, which may be limited to the mucous membrane, or may be implanted in the deeper tissues. They are ulcerative, but do not form crusts as upon the external integument.

The so-called "*syphilitic psoriasis of the tongue*" consists of flattened grayish or silvery white patches, usually developed upon the dorsum; they are due to thickening and condensation of the epithelium, giving them a leathery consistence; they never become eroded or ulcerated.

Superficial glossitis is characterized by circumscribed or diffuse thickening of the submucous cellular tissue, resulting in a lamellated induration, presenting a red, glossy appearance; it rarely ulcerates.

Deep or parenchymatous glossitis invades the muscular tissue of the organ which becomes tumefied, sometimes enormously hypertrophied. The surface presents a rough lobulated appearance, quite pathognomonic. Ulceration never occurs except from accidental irritation.

Gumma of the tongue may develop in the mucous, submucous, or muscular tissues. Superficial gummata occur as small nodules beneath the epithelium, either singly or in groups, which soften and break down into an open ulcer as do gummata of the skin.

The deep or parenchymatous gummata are

seated in the muscular substance of the tongue, and usually occur in groups. Upon ulcerating they expose deep cavities with overhanging sloughy walls; these may run together and assume a serpiginous form.

Gummatous deposits of the *soft palate* or *palatine arch* may be circumscribed or diffuse; they often do irreparable mischief in destroying the soft parts, perforating the maxillary bones, and converting the nose and pharynx into one enormous cavity.

The *tonsils and posterior wall of the pharynx*, as well as the posterior nares, are often attacked by tuberculo-ulcerous and gummatous lesions.

Tertiary lesions of the nasal passages involve the cartilages and bones, leading to necrosis and the production of the offensive condition know as ozæna syphilitica.

Perforation of the septum may occur with destruction of the nasal bones, causing a flattening or falling in of the bridge of the nose, which, with the tilting up of the apex, constitutes a characteristic deformity.

The ulcerative process may extend along

the Eustachian tube, and may even penetrate the cavity of the cranium.

Tertiary ulcerations of the larynx are generally due to the disintegration of gummatous deposits; the epiglottis, vocal cords, and other structures of the larynx may be entirely swept away.

The same destructive process may affect the *trachea* and *bronchi*. Perforation of the former with a more or less permanent external opening may occur.

The most unfortunate result of syphilis of the air passages is stenosis from cicatricial contraction, producing serious and alarming dyspnœa or even complete apnœa.

The *œsophagus, stomach, and intestinal tract* in its entire extent may be the seat of tertiary lesions; the large intestine is the most frequently affected.

Syphilitic ulceration of the rectum derives its chief clinical importance from the frequency with which it is followed by stricture of the rectum; it is much more common in women than men.

The cicatricial contraction may proceed

from an ulcerative gumma, or more frequently from a diffuse gummatous deposit in the ano-rectal walls, which degenerates into a retractile fibrous tissue without ulceration, or other implication of the mucous membrane.

Tertiary lesions may occur upon the genital membranes of both sexes; upon the glans penis they occur in the form of pea-sized nodules or diffused hard patches; upon the vulva, the clitoris, the labia minora, as circumscribed or diffuse gummata.

CHAPTER XIX.

SYPHILIS OF THE APPENDAGES OF THE SKIN—OF THE FINGERS AND TOES—OF THE MUSCLES, TENDONS, BURSÆ, AND BONES.

ALOPECIA is one of the most common and characteristic features of syphilis, often occurring in connection with the syphilitic fever, or the earlier eruptions.

It may be limited to the hairy scalp, or it may affect the hairy growth of the entire body; there may be only a thinning of the hair in spots, or the loss may be complete.

Syphilitic alopecia is unaccompanied with any structural change in the follicles; the hair simply loses its lustre, becomes dry and readily comes out upon the slightest traction.

It is doubtless due to a local derangement of the nutrition of the hair papillæ from the anæmiating impression of the poison upon

the system. It has its analogue in the falling of the hair after the eruptive fevers.

The loss of the hair is not permanent, except when it continues to recur in connection with relapsing cutaneous manifestations.

The later pustular and ulcerative lesions, involving the cutis in its entire thickness, destroy the hair-follicles, leaving permanent, bald spots upon the scalp, beard, or eyebrows.

SYPHILIS OF THE NAILS.

Syphilis affects the nail structures by processes precisely analogous to those just described in connection with the hair.

In the early stage, the nail becomes dry, lustreless, thinned, and studded with white, spots, with liability to easily fissure and split; later the matrix may become involved.

In *syphilitic onychia*, the morbid process begins at the lunula or side of the nail, the posterior margin becomes thinned and eroded, terminating in a free jagged edge,

the nail is gradually loosened from its bed and exfoliated.

Another variety of onychia is characterized by hypertrophy of the nail substance, the nail sometimes attaining a thickness of three or four times its normal size.

In *paronychia*, the process usually begins as a papule developed under the nail, or in the ungual fold corresponding to the lunula, or along its lateral border.

This lesion may ulcerate, involving the matrix, or exuberant granulations may spring up which crowd the nail from its bed, resulting in its partial or complete loss.

A new nail is ultimately produced which is apt to be misshapen or distorted. If the matrix be entirely destroyed, regeneration of the nail is not possible, and its bed is occupied by rough irregular bands of horny substance.

SYPHILIS OF THE FINGERS AND TOES—DACTYLITIS.

The fingers and toes may be the seat of primary or secondary lesions, but by far

the most important syphilitic affections of these members belong to the tertiary stage.

Tertiary lesions affecting the phalanges are of the gummous type; they may involve the subcutaneous tissues and fibrous structures of the joints, or they may be seated in the bone and joint.

The first form of dactylitis consists of a gummous infiltration beginning in the superficial tissues or periosteum; it may involve one phalanx or the entire member, or several fingers and toes at the same time, or successively.

The affected member is increased in size, the integument inflamed and reddish, the swelling hard, firm, and terminating abruptly, and accompanied with more or less articular stiffness.

The course of the disease is chronic. Effusion into the joint, disintegration of the cartilages and other joint structures, and permanent loss of motion may occur.

In the second form of dactylitis, the gummous deposit is seated in the bone underneath the periosteum or in the medullary

membrane. Like the first variety, it may affect one phalanx or several.

The swelling is usually fusiform or acorn-shaped, the superficial tissues are not involved except secondarily in the rare cases where suppuration occurs and ulcerates through to the surface.

Most frequently involution occurs through resorption, without disintegration of the gummous tissue. Atrophy and shortening of the bones, or the formation of a false joint are not infrequent results.

SYPHILIS OF THE MUSCLES.

Syphilitic affections of the muscles consist of diffuse hyperplasias of the connective tissue, or the development of gummy tumors in the sheaths or in the substance of the muscles.

Both forms may result in atrophy of the muscular fibres, shortening, contractions, and impairment of function.

SYPHILIS OF THE TENDONS, APONEUROSES, AND TENDINOUS SHEATHS.

Syphilis may affect any of the *aponeurotic or tendinous structures of the body*; the point of election is usually where the tendons are thickest, near their insertion. The morbid process usually consists of connective-tissue thickening or gummous deposits.

Syphilitic affections of the tendinous sheaths are usually characterized by effusions, forming fluctuating tumors of variable size and shape; their seat of predilection is the back of the hands and wrists.

SYPHILIS OF THE BURSÆ.

Syphilitic affections of the bursæ are uncommon; the bursa over the patella is the most frequently attacked, the lesion consists of a gummatous infiltration of the bursa and surrounding tissues, forming a tumor or projection of considerable size and thickness.

The course of syphilitic bursitis is exceedingly chronic, and but little influenced by specific treatment. If subjected to much

irritation or pressure, the surrounding tissues become inflamed, and the integument over the bursa ulcerates.

SYPHILIS OF THE BONES.

The *osseous lesions* of syphilis may develop at an early period, although the more characteristic changes in the bones occur in the tertiary stage.

In the early stage, they are limited to periosteal inflammation, sometimes periosteal nodes; in the later stage, gummous deposits occur in and beneath the periosteum and in the bone substance.

Pericranial periostitis is an early manifestation of syphilis; with it may be associated periostitis of the clavicle, sternum, ribs, tibia, etc. It is attended with peculiar pains, termed osteocopic, which are always intensified at night.

Pericranial tumors, periostosis of the tibia, etc., may also appear as a secondary manifestation; these tumors or nodes are flattened or convex, vary in size from one-half to two inches in diameter, and may

form a considerable elevation above the surface.

They commonly disappear under specific treatment, or they may become transformed into bony tissue, constituting exostoses.

Suppuration is a comparatively rare termination of syphilitic periostitis. The tissues soften and break down, and fluctuation is felt; the pus may be evacuated through one or more openings, through which pieces of necrosed bone are discharged.

The later lesions occur as circumscribed gummata developed upon the surface of the bone or within its structure, forming rounded hemispherical tumors which undergo one of two processes.

The tumors may soften and ulcerate externally, or instead of disintegrating the contents may undergo calcareous degeneration, leaving prominent masses.

Another manifestation of bone syphilis consists in a diffuse gummatous infiltration through the cancellous structure, resulting in condensation, eburnation, and thickening of the bone.

The sequelæ of osseous lesions are caries, liability to fracture from increased porosity or other structural changes, compression of important vessels and nerves from exostoses of the cranial and spinal bones.

CHAPTER XX.

SYPHILIS OF THE EPIDIDYMIS AND TESTIS—SYPHILIS OF THE VISCERA—OF THE LIVER, SPLEEN, KIDNEYS, AND OTHER INTERNAL ORGANS.

SYPHILIS of the *epididymis* is exceedingly rare. It is usually manifested by a small nodule or tumor, from the size of a pea to that of a nut, situated in the globus major; it is hard, indolent, and undergoes resorption spontaneously.

Syphilitic affections of the *testis*, usually denominated syphilitic orchitis, while sometimes occurring comparatively early, may be properly classed among the tertiary lesions.

Syphilitic orchitis may occur in the form of gummous nodules or tumors upon the surface or in the body of testis, or it may develop as an interstitial hyperplasia or thickening of the connective tissue of the organ.

This interstitial growth may degenerate into a fibrous or cartilaginous tissue. Involution of the indurated mass not infrequently results in obliteration of the seminal tubes, atrophy of the testis, etc.

All the internal organs are liable to be affected by syphilis.

Syphilis of the viscera usually manifests itself under two forms : circumscribed gummy tumors, and diffuse interstitial hyperplasias, resulting in contraction and induration of the connective tissue of the organs.

The liver, spleen, and kidneys are also peculiarly prone to degenerative changes of an amyloid character. Of all the internal organs, the liver is the most frequent subject of syphilitic changes.

Lesions of the liver of a purely congestive nature may occur in the secondary stage, accompanied with slight augmentation of the volume of the organ, icterus, dyspepsia, and other symptoms of gastro-intestinal derangement.

Chronic interstitial hepatitis, a late lesion, may be either circumscribed or general; the

changes are first hypertrophic, then atrophic, resulting in the irregularly lobulated condition characteristic of cirrhosis, and accompanied with emaciation, ascites, etc.

Gummata of the liver develop in the shape of pea to walnut sized masses, imbedded in the fibrous structure; they are usually multiple; the tumors may be absorbed or transformed into fibrous tissue.

In *amyloid degeneration of the liver*, the anatomical changes are not peculiar to syphilis, but are essentially the same as characterize this form of degeneration due to other causes.

The *splenic lesions of sypnilis* ao not differ essentially from those described in connection with the liver. Enlargement of the spleen is a prominent feature, the organ sometimes attaining two to four times its ordinary dimensions, depending upon the intensity of the cachexia.

Syphilis of the kidneys may occur as a diffuse hyperplasia, in the form of gummy tumors or amyloid degeneration of the vessels.

Chronic syphilitic nephritis does not

differ essentially from interstitial nephritis due to alcohol and other causes. It is likely to be more circumscribed, and the corrugated cicatrices at the surface of the organ more prominent.

Gummata of the kidneys are exceedingly rare; they are usually pea-sized, and situated upon the surface of the organ or imbedded in the thickness of the cortical substance; their presence usually gives rise to the symptoms of parenchymatous nephritis.

Amyloid or waxy degeneration of the kidneys owes its origin to the cachexia impressed upon the organism by syphilis; it is frequently associated with anasarca and albuminuria.

Syphilis may affect the heart, lungs, and other internal organs by processes precisely similar to those described. Anatomical differences of structure, of course, determine modifications in the resulting lesions.

CHAPTER XXI.

SYPHILIS OF THE EYE AND EAR—SYPHILIS OF THE NERVOUS SYSTEM.

THE eyelids may be the seat of chancre, as well as the various forms of eruptive disorder met with upon other portions of the integument.

Syphilitic affections of the *cornea* are exceedingly rare in acquired syphilis, while quite common in the hereditary form; syphilitic keratitis may manifest itself either in the punctate or diffuse form.

Of all specific affections of the eye, *syphilitic iritis* is the most important, not only on account of its comparative frequency, but also from its unfortunate results upon the integrity of vision.

Iritis develops in the early secondary stage, usually coincidently with the papular or pustular eruption; it is commonly double, and relapses are apt to occur; the

symptoms are the same as those of iritis due to traumatism or other causes.

The eye presents a pinkish-red appearance, the zone of injection around the cornea being particularly prominent, there is increased lachrymation, accompanied with subjective sensations of supra-orbital pain and photophobia.

The iris is hazy and muddy, the outline of the pupil irregular, and presenting often a scalloped appearance, due to adhesions with the anterior capsule of the lens from effusions of plastic lymph.

On account of these adhesions and thickening, the pupil does not readily respond to impressions of light; the opening of the pupil may be permanently occluded from loss of dilatability.

Tertiary lesions of the iris are exceedingly rare. A gumma may appear as a small yellowish-red neoplasm springing from the iris, and may attain to a considerable size, entirely filling up the pupillary space; one or both eyes may be affected.

Gummatous infiltration may involve the *choroid, ciliary body, and other structures*

of the globe, either separately or in conjunction with gummous iritis.

Syphilitic affections of the fundus are quite uncommon. The symptoms of *syphilitic retinitis* and *optic neuritis* do not differ from those of inflammation of these structures due to a non-specific cause.

Paralysis of the nerves supplying the eye, causing ptosis, diplopia, strabismus, etc., are due to syphilitic lesions of the brain at the point of origin of the cranial nerves, or along their course.

Syphilitic eruptions may invade the external ear as other portions of the integument; mucous patches and condylomata are found in the external auditory canal; nodes, hyperostoses, and exostoses are also found in this region.

Syphilis may involve the *middle ear* from extension along the Eustachian tube of lesions originating in the naso-pharyngeal cavity.

The auditory nerve is sometimes affected by syphilis, resulting in deafness; this loss of function may be sudden without appre-

ciable lesion, or it may be preceded by hyperæmia, catarrh, etc.

SYPHILIS OF THE NERVOUS SYSTEM.

Certain purely functional phenomena met with in the early stage of syphilis, as cephalalgia, sternalgia, rheumatoid pains, analgesia, hystero-epileptiform spasms, etc., are due to the impression of the poison upon the nervous system.

Syphilitic affections of the nervous system, like those of the internal organs, belong essentially to the late manifestations. They are usually met with after the third year, exceptionally within a few months after the initial lesion.

Among the predisposing causes which determine the localization of syphilis toward the nervous system may be mentioned: hereditary predisposition to nervous disease, nervous exhaustion, alcoholic and venereal excesses, etc.

The initial severity of syphilis does not indicate a tendency to implication of the nervous system; on the contrary, the severest examples of brain syphilis have been

found in persons whose initial symptoms were mild and insignificant.

Syphilis affects the nervous system in three ways: 1st, by the development of gummata within the nerve substance; 2d, by causing disease of the arteries interfering with nerve nutrition; 3d, by compression of the brain, cord, and nerves from morbid growths.

This pressure is caused by exostoses of the cranial bones and spinal vertebræ, by thickening of the dura mater, by narrowing of the bony canals through which the nerves pass.

Of the meninges of the brain, the dura mater is the most frequent seat of tertiary syphilis, the lesions consist of gummata, or of diffuse infiltrations resulting in thickening and sclerosis.

Gummata of the dura mater may extend along the pia mater, and invade the brain by direct growth; or as is most frequently the case, the brain symptoms are caused by passive pressure.

Gummata of the brain substance usually originate in the pia mater or subarachnoid

space; they grow toward the cortex of the organ, and may penetrate the gray substance, sometimes encroaching upon the white matter.

Their favorite seats are the optic tract, the anterior lobes, at the surface of the frontal convolutions, the pons Varolii, and the base of the brain.

Syphilitic periarteritis and endoarteritis are caused by the development of gummous nodules, or infiltrations of the coats of the cerebral vessels, obliterating their lumen and leading to anæmia and circumscribed softening.

Gummata of the spinal cord are exceedingly rare. Symptoms of syphilis of the cord and its nerves are generally due to passive pressure, from exostoses and caries of the vertebræ.

Paraplegia, paralysis of the bladder and sphincter ani, the ataxic symptoms with the group of sensory disturbances peculiar to tabes, may result from syphilis of the cord.

The etiological relations of syphilis and tabes dorsalis have not been definitely de-

termined. Statistics would seem to prove a causal connection in the immense majority of cases.

Syphilitic affections of special nerves may be caused by pathological processes developed at their point of origin, by pressure as they pass through the bony channels, more rarely by gummatous growths within their sheaths or substance.

Paralysis of the motor nerves, as well as the nerves of special sense, leading in some cases to the impairment or complete loss of the sense of taste and smell, are among the recognized effects of syphilis.

Syphilis of the nervous system embraces a vast array of morbid manifestations. There is scarcely any form of organic disease of the brain, cord, and nerves, the symptoms of which may not be accurately simulated by syphilis.

CHAPTER XXII.

HEREDITARY SYPHILIS.

To the fundamental characters of syphilis already traced, must be added its susceptibility of hereditary transmission.

While originating from the same virus and manifesting itself by lesions of the same general character, hereditary syphilis is differentiated from the acquired form by its mode of origin and certain peculiarities in its evolution.

Hereditary syphilis never makes its début by a chancre. Every syphilis acquired after birth must have for its point of departure a chancre.

There is a certain definite order in the evolution of acquired syphilis—it can be divided into distinct stages. It attacks first the superficial, later the deeper structures.

In hereditary syphilis, the chronological

element is wanting; there is a simultaneous development of superficial and deep lesions.

The early cutaneous lesions of acquired syphilis are dry and plastic; in hereditary syphilis the moist or humid form predominates. Vesicles and bullæ, exceedingly rare in the one, are common in the other.

The visceral lesions of acquired syphilis always mark its ultimate stage. In hereditary syphilis interstitial hyperplasias of the visceral organs may be the earliest expression of the disease, often existing before birth.

The influence of acquired syphilis upon mortality is quite restricted; it rarely causes death. The influence of hereditary syphilis is murderous; it condemns the offspring to almost certain death.

The influence of syphilis upon the product of conception is manifested in various modes and in different degrees of intensity.

In death *in utero* at any period of its development and abortion, in its being carried to full term, but still-born, in its being born alive with syphilis, or apparently

healthy, but soon afterward giving evidence of the constitutional taint.

The intra-uterine death of the fœtus is the most habitual expression of the hereditary influence of syphilis.

Fully one-third of all syphilitic infants die before being born; of children born alive and viable, more than one-third die within the first six months of their existence.

An analysis of statistics, carefully compiled from various authentic sources, shows that only one child finally survives out of every four syphilitic pregnancies.

A syphilitic man may beget a syphilitic child, the mother remaining exempt from contamination; the syphilogenic influence of the father is, however, comparatively restricted.

A syphilitic woman may bring forth a syphilitic child, the father being perfectly healthy; the syphilogenic influence of the mother is much more potent and pronounced than that of the father.

When both parents are syphilitic, or the

mother alone is syphilitic, and the disease recently acquired, the infection of the fœtus is almost inevitable.

While hereditary transmission is more certain when the parental syphilis is in full activity of manifestation, it may also be effected during a period of latency, when no active symptoms are present.

The age of the diathesis, specific treatment, and other circumstances modify the syphilogenic influence of both parents.

Time exerts a marked attenuating influence upon the diathesis. As the interval between the date of parental infection and impregnation increases, there is a progressive enfeeblement of the syphilogenic capacity, as shown in a series of successive pregnancies.

Abortions take place at a more advanced period of fœtal development, finally cease, and pregnancy may result in a child living but syphilitic, still later in children bearing no trace of syphilis.

Specific treatment may also suppress, or hold in temporary abeyance, the syphilogenic influence of the parents. This effect,

no matter how actively treatment is employed, is by no means constant and certain.

A woman may have one or more abortions from syphilis; if she be subjected to active treatment, and pregnancy occur, she may bring forth a healthy child; if treatment be now discontinued, the next pregnancy may result in a syphilitic child.

The influence of paternal heredity is rarely manifest after a period of three or four years; that of maternal heredity is much more prolonged and active—five or six years, or longer.

A woman, healthy at the date of conception, may afterward contract syphilis, and transmit it to her child *in utero*. Contamination of the fœtus is not probable if the maternal infection takes place after the seventh month of pregnancy.

The intra-uterine death of the fœtus is often the result of changes in the placenta engendered by syphilis; these changes may be found both in the maternal and fœtal portion.

When the fœtus dies in utero, and is expelled by abortion, the skin is often found

macerated, the epidermis lifted up in large bullæ, or entirely wanting over large patches of the surface.

If it has reached an advanced stage of development, characteristic changes are also found in the epiphyses of the long bones and in the internal organs, especially the liver and lungs.

When a child, the subject of inherited syphilis, is born alive, it may be apparently healthy, and present no positive evidences of specific taint.

There is usually an outbreak of specific eruptions within a short period, ranging from the first week to the third month, rarely delayed after the fourth month.

If there be no unequivocal manifestation of the disease during the first year, it may be assumed that the child has escaped contamination.

Generally, however, evidences of syphilis are manifest at birth. The child is small and puny, with a peculiar aged aspect, the hair scanty and the nails undeveloped, the skin loose and wrinkled, and often the seat of eruptive disorder.

One of the earliest and most characteristic symptoms is syphilitic coryza, caused by structural changes in the mucous membranes of the air passages. It is often attended with a purulent discharge, causing excoriations and fissures of the nostrils and upper lips.

This condition, known as "the snuffles," is quite pathognomonic of inherited syphilis. Sometimes there may be complete obstruction of the nostrils, rendering it difficult or impossible for the child to nurse.

Later the ulcerative process may involve the cartilages of the bones and nose, resulting in destruction of the septum and bony framework, with flattening and depression of the bridge of the nose.

The cutaneous eruptions characteristic of acquired syphilis are met with in the hereditary form, as erythema, papules, pustules, tubercles, etc.; in addition, vesicular, bullous, and furuncular lesions occur

On account of the delicacy of the skin, papules are quickly transformed into mucous patches; fissures and condylomatous

lesions about the mouth, genitals, and anus are much more common.

Lesions of the viscera often coexist with the early cutaneous manifestations. They consist chiefly of diffuse infiltrations of the connective tissue of the organs. Circumscribed gummatous deposits more rarely occur.

Visceral lesions, while presenting no essential difference, from an anatomical point of view, from those due to acquired syphilis, yet possesss a grave clinical significance. Hepatic lesions, especially, constitute a prolific cause of death.

Death most frequently occurs from gastro-intestinal complications, from marasmus, from the cachexia impressed upon the organism, etc.

Syphilitic children succumb to the most trifling affections, and often die without apparent cause; they seem to possess a feeble vital tenacity—an inherent inaptitude for life.

In some cases the entire morbid manifestations are limited to mucous patches of the genitals, anus, and mouth; these may con-

tinue to recur for several months, and then cease, the child afterward exhibiting no specific symptoms.

The severity of inherited syphilis is generally exhausted during the first two or three years of infantile life, this period may mark a definite end of the disease, or a new train of symptoms may arise in connection with the second dentition.

Outbreaks of specific symptoms may not only be continued with long intervals up to the age of puberty, but evidences of the diathesis may be manifested as late as the twentieth, thirtieth, or even fortieth year.

Hereditary syphilis is further differentiated from the acquired form by certain lesions which are its exclusive product, as pemphigus, peculiar changes in the bones, dental malformations, lesions of the eye and auditory apparatus.

Syphilitic pemphigus consists of flattened or flaccid bullæ containing a thin sero-pus, situated upon a reddened base, and having as their seat of predilection, the palms and soles; this eruption may be present at birth or develop soon afterward.

The bullæ increase in size, sometimes becoming confluent, and readily rupture, the retracted epidermis showing at their base an intensely red, shining surface, or they may dry up into yellowish or greenish crusts.

Syphilitic pemphigus carries with it a grave prognosis; it is usually accompanied with febrile disturbance, inability to nurse, etc., and life is extinguished from exhaustion, due to diarrhœa and other causes.

The lesions of the bones in inherited syphilis are chiefly characterized by changes in the diaphyso-epiphysal cartilages (osteochondritis); these consist of degeneration and atrophy of the cells of the cartilage, retardation of ossification, separation of the epiphysis, with periostitis of the diaphysis.

Both the head and shaft of the long bones may be tumefied, hypertrophied, and covered with inequalities and nodositis of the surface.

Osteophytic growths not infrequently develop at the margin of the anterior fontanelle and elsewhere, which may cause obliteration

of the sutures, changes in the shape and dimensions of the cranium, and interfere with the normal development of the brain.

The milk teeth of syphilitic children are apt to be malformed, chalky, and lost early. The peculiar changes pathognomonic of inherited syphilis are most characteristically displayed in the permanent central incisors, which have been denominated "syphilitic test teeth."

This specific abnormality consists in the narrowing of the cutting border of the teeth, giving them a peg-shaped form, with a peculiar crescentic shaped notch of the cutting edge. Besides this single broad notch, they are apt to be smaller, and converge towards each other with a large interspace.

The lesions of the eye are chiefly confined to the iris and corneous structures. *Interstitial or parenchymatous keratitis*, which is regarded as peculiar to hereditary syphilis, may occur from the fifth month to the third year, sometimes at a much later period.

Deafness due to affections of the middle ear, with or without purulent discharge, or

destruction, partial or complete, of the membrana tympani, is a specific characteristic of inherited syphilis. Deafness may occur without any appreciable lesion of the auditory apparatus.

Independent of these various lesions of particular structures and organs, hereditary syphilis may reveal its specific origin by certain characters expressed in the physiognomy, and in the physical and mental development, as well as in functional derangements.

The complexion of the subjects of hereditary syphilis is usually of a pale, grayish, or earthy tint presenting a marked contrast with the pinkish or rosy hue of health.

The physiognomony of an hereditary syphilitic is characteristic. With the flattening or sinking in of the bridge of the nose, there is an exaggerated prominence of the frontal protuberances, sometimes of the forehead *en masse*, often an enlargement of the cranium as in hydrocephalus.

The cranial bones, especially the parietal, may be occupied by osteophytic growths, with osseous tuberosities of the long bones,

incurvation of the tibia, pigeon-breast malformation of the thorax, and spinal deformity as are met with in rachitis.

The physical development is slow and retarded, the growth stunted and dwarfed, the physique below the average, the genital organs rudimentary and undeveloped, virility retarded. The term *infantilism* has been employed to express the sum total of these characteristics.

Intellectual development is likewise retarded. The child is apt to be slow and backward in learning, either from congenital deficiency of mind, or from a sort of intellectual asthenia.

Hereditary syphilis carries with it certain morbid predispositions to affections of the nervous system, as meningitis, convulsions, hydrocephalus. The brain and its membranes are more apt to be affected than the spinal cord, or the special nerves.

CHAPTER XXIII.

THE TREATMENT OF SYPHILIS.

A KNOWLEDGE of the natural history of any disease is necessary in order to appreciate the therapeutic value of the measures employed in its treatment.

A study of the natural course of syphilis, abandoned to its own evolution and uninfluenced by treatment, shows that its manifestations are self-limited, with a tendency to spontaneous cessation.

In some cases, syphilis shows itself as a mild disease, with slight and only occasional manifestations, and runs its course from disease to health without any treatment whatever.

Ordinarily, however, syphilis is not a benign disease, as shown by its profound impress upon the organism and the vast array of morbid manifestations it is capable of causing.

The benignity or malignancy of the type of syphilis depends more upon the patient's constitution than upon the quality of the infecting principle; the organism plays the principal rôle in determining the character of the accidents.

Whether the syphilis be mild or severe, clinical experience proves that we possess two drugs which have a remarkable influence in modifying its manifestations and hastening their cure.

These two drugs, mercury and iodide of potassium, constitute the basis of all special therapeutic treatment at the present day.

The student should have a definite understanding of what may be accomplished by specific medication; while appreciating the full measure of its therapeutic value, he should also recognize its limitations.

It is an error to suppose that every syphilis not subjected to specific treatment will invariably run a severe course, or that a sufficiently early, active, and prolonged specific treatment will infallibly cure the disease.

It is a matter of common observation

that many syphilitics, who have never taken a grain of mercury or iodide of potassium, have only mild symptoms of the secondary type, and then apparently get well and remain so.

It is likewise a fact, amply demonstrated by clinical experience, that specific treatment, actively and energetically employed from the first, and sufficiently prolonged, does not always cut short the disease and prevent tertiary lesions.

It can be justly claimed for mercury that it modifies or suppresses secondary accidents, and that it attenuates the syphilogenic influence of parents; for iodide of potassium, that it rapidly cures local destructive processes of the tertiary type.

In the treatment of the erythematous, papular, and papulo-pustular eruptions, the action of mercury is prompt and curative, it abates their intensity and hastens their involution.

Iodide of potassium finds its special application in the treatment of lesions of the gummous and ulcerous type, and the interstitial hyperplasias of the viscera; the

rapidity of its action in melting away gummous deposits and arresting ulcerative processes is often marvellous.

For the lesions of the intermediary stage, the use of these two drugs in combination, constituting the so-called mixed treatment, is often more efficacious than either alone.

A distinction between the *curative* and *preventive* action of these drugs must be recognized. Their curative action upon specific lesions is constant and certain; their preventive influence is much less pronounced.

Mercury does not prevent the evolution of syphilis; successive crops of secondary accidents continue to recur in patients under the full influence of an active mercurial treatment.

Whether it exerts a material influence in preventing the development of tertiary lesions is questionable. Since tertiary manifestations are not a constant or essential feature of syphilis, it becomes difficult to discriminate between the effects of treatment and the self-limitation of the malady.

It is not reasonable to suppose that a drug

which is powerless to prevent successive outbreaks of a disease during its active employment, should be able to dominate the diathesis years later, and long after its discontinuance.

While mercury does not infallibly destroy the diathesis or furnish an absolute safeguard for the future, it is the most efficient agent that medical science has discovered in the treatment of syphilis.

There are certain principles pertaining to the use of mercury in the treatment of syphilis which clinical experience has established as fixed and definite.

Mercury should be given in moderate doses, and never pushed beyond the production of its primary physiological effects; large doses are not necessary in order to develop the full therapeutic efficacy of the drug.

Mercury, judiciously administered in small doses, exercises a decidedly curative action upon the manifestations of syphilis, and its continuous and prolonged use may prove entirely inoffensive to the patient.

Given in doses sufficiently large to pro

duce severe salivation and other toxic effects, it is positively pernicious.

The influence of the drug upon the eruption, and the toleration of the patient's system should be the measure of the dose; the susceptibility to the action of mercury varies in different individuals to such a degree that the exact dosage for all cases cannot be given with precision.

The proper time for beginning the general treatment of syphilis is so soon as the specific character of the disease is determined beyond doubt. An absolutely certain diagnosis is rarely possible before the development of constitutional symptoms.

The methods of employing mercury are numerous and varied, both as regards the activity and duration of treatment, the form of the preparation used, and the mode of its introduction into the system.

The two principal plans of administering mercury are known as the "tonic treatment" by the continuous use of small doses, and the method of "successive or intermittent treatments."

By the continuous plan, the dose of mer-

cury is gradually increased until it produces slight salivation, which constitutes the "full" dose; one-half or one-third of this quantity represents the "tonic" dose, which is continued from two to three years, with an occasional resort to larger doses when active symptoms appear.

By the intermittent plan, the effect of the mercury is carried to the point of toleration, and its use continued for two or three months; it is now intermitted for two months, and then recommenced, intermissions alternating with periods of active treatment for two or three years.

The objection to the first method of treatment is that the continuous and prolonged use of the drug exhausts the patient's susceptibility to its influence; to the second, that the period of intermission may coincide with an active outbreak of the disease when the remedy is most needed.

The true indications are to adapt the treatment to the symptoms of the disease; when manifestations appear they should be suppressed by active treatment; when they cease, the treatment should be remitted.

Mercury may be introduced into the system through four different channels: 1.. Through the skin (the dermic method). 2. The skin and pulmonary mucous membrane (the dermo-pulmonary method). 3. The subcutaneous tissues (the hypodermic method). 4. The stomach (the stomachal method).

The first two methods are lacking in precision, the quantity of the drug absorbed can only be measured by its effects upon the system; the last two are more exact, a determinate quantity of the drug is introduced each time.

The *dermic method* consists in making frictions over different regions of the body with metallic mercury or one of its salts, combined with a fatty substance, as in the blue ointment.

This method finds its special application in the case of children and of pregnant women, and in all cases where gastro-intestinal irritation is liable to follow its ingestion by the stomach.

It is also serviceable in securing the rapid action of mercury upon lesions in the immediate locality of its application. It has the

decided disadvantages of uncleanliness, and of causing cutaneous irritation.

By the *dermo-pulmonary method*, calomel or one of the oxides are usually employed by means of fumigations. The specific effect is due, rather to the introduction of the medicated vapor through the pulmonary mucous membrane, than to its absorption through the skin.

Mercurial fumigations are rarely relied upon for the systematic treatment of syphilis. They serve rather as an adjunct to other methods when it is desirable to obtain prompt and decided effects.

The *hypodermic method* is a comparatively recent innovation upon older and established methods; it has the advantages of great convenience of use, combined with scientific accuracy.

It is also claimed that the action is more promptly curative, that the maximum effect of the drug is obtained with the minimum dose, and that it causes neither salivation, stomach, nor intestinal irritation.

While hypodermic injections are undoubtedly efficacious, they are not adapted

for general use in the treatment of syphilis, and it is hardly probable that they will ever supersede the classical methods.

Hypodermic injections of iodoform in the treatment of both secondary and tertiary accidents of syphilis have been employed, but with indifferent success. The results have not been sufficiently favorable to warrant further experimentation.

This method has the countervailing disadvantages of causing pain which may be intense and last for some time, of producing indurations, intra-dermic and subcutaneous tumors and abscesses, sometimes resulting in gangrene, extensive eschars, etc., at the seat of puncture.

Various preparations of mercury have been employed for subcutaneous injections, as calomel, the bichloride, the bicyanide, the albuminate, and peptonate of mercury, the formamide of mercury, the sublimate serum, etc.

The *introduction of mercury by the stomach* possesses certain advantages which render it preferable to all other methods in the immense majority of cases.

It may be necessary to combine the drug with a vegetable bitter tonic when the stomach is irritable, or tolerance may be secured by the use of small doses of opium or other adjuvants.

The preparation most habitually given *per os* is the proto-iodide or the bichloride; the former is less irritating; they may be indifferently employed, sometimes alternated with advantage.

Inunctions or fumigations should be employed in conjunction with this method when the menacing character of the manifestations requires that the mercurial influence be intensified.

The bin-iodide, alone or associated with iodide of potassium, may be used with advantage towards the close of the secondary stage, the quantity of the iodide varying according to the ulcerative tendency of the lesions.

While the iodide of potassium is the remedy *par excellence* for the tertiary stage, it should be used in the early stage if the lesions show a tendency to ulcerative action.

Affections of the bones, tuberculo-ulcerous lesions, ecthymatous, and serpiginous ulcerations, specific lesions of the viscera, etc., come within the range of its curative action.

Iodide of potassium can be given with impunity, as it is not so toxic in its effects as mercury. It should be pushed, no matter how large the dose necessary to dominate the destructive action.

The use of iodide of potassium may cause a condition known as "iodism," characterized by various disturbances due to the toxic impression of the drug upon the central nervous system, also the production of various forms of eruptive disorder.

The production of "iodism," while not an absolute contra-indication to the continued use of the iodide, is not necessary, as claimed by some authorities, in order to secure the full therapeutic efficacy of the drug.

The cutaneous eruptions caused by iodide of potassium represent almost every form of eruptive element, as erythema, papules tubercles, bullæ, furuncles, purpura, etc.

It is well to bear in mind that they may closely simulate the manifestations of the disease that the drug is intended to cure.

"Iodic eruptions" are not always caused by large doses or long-continued use of the drug; they depend less upon the quantity ingested than upon the idiosyncratic intolerance of the individual.

Iodic, like other drug eruptions, usually disappear promptly upon the withdrawal of the offending drug. In many cases, however, the patient's condition demands the continuance of its therapeutic action.

Many expedients have been suggested with a view of counteracting the cutaneous irritation while still continuing the drug, such as its association with Fowler's solution, with belladonna, its introduction by hypodermic use, etc.

THE LOCAL TREATMENT OF SYPHILIS.

The local treatment of syphilis has always been regarded as merely accessory to general treatment and of secondary inportance, yet direct topical application to the seat of syphilitic lesions exerts a marked influence in hastening their involution.

The topical use of mercury finds its special application where the eruptive elements are massed or aggregated in limited areas, instead of being diffused over the entire surface.

In such conditions the local application of mercury by inunctions, or hypodermic injections in the immediate vicinity of the eruption, exert a more rapidly curative action than constitutional treatment.

For the purposes of local treatment, lotions of the bichloride, frictions with oleate of mercury, the ung. hydrarg., the ammoniated mercurial ointment, mercurial soaps and plasters, and hypodermic injections may be employed.

The earlier cutaneous eruptions, as the erythematous and papular, usually disappear promptly under the internal use of mercury, and rarely require local treatment.

When situated upon parts exposed to observation, as the hands, neck, and face, the disfiguring character of the eruption renders its speedy suppression a matter of moment to the patient.

It will be found that local treatment will

cause the eruption to disappear much more rapidly in the region of its application than on remote parts of the body.

The papulo-squamous syphilides of the palms and soles are often extremely rebellious to the internal use of mercury, but yield with comparative celerity when brisk frictions of blue ointment or the oleate of mercury are locally employed.

In the later lesions of a pustular character, in gummatous or serpiginous ulcerations, stimulating lotions of the bichloride, of carbolic acid, applications of powdered iodoform, etc., may be used with advantage.

Since the mouth and genital region constitute two important centres of contagion, the speedy suppression of contagious lesions in those parts becomes a matter of prime importance.

Mucous patches in the mouth should be promptly destroyed; acid nitrate of mercury, solution chromic acid (10 grs. to ʒi.), nitrate of silver, sulphate of copper, or solutions of the bichloride (2 grs. to the ʒi.) may be employed.

Mucous patches of the vulva and perigenital region may be treated with acid nitrate of mercury, nitrate of silver, or dusting with iodoform or calomel.

Mucous papules in this region often take on a hypertrophic or vegetating character; the application of a dusting powder containing salicylic acid, 1 pt.; boracic acid, 3 parts; and calomel, 6 pts., will often cause them to rapidly melt away.

HYGIENIC AND TONIC TREATMENT OF SYPHILIS.

Common observation shows an immense difference in the character of syphilis in different individuals—in the multiplicity, intensity, succession, and duration of its manifestations.

Syphilis is most severe in persons of broken-down constitutions, in persons suffering from privation, want and misery, of intemperate habits, the scorbutic and cachectic, persons in the extremes of life, whose vital resistance is the feeblest.

Since the quality of the syphilis is the product of peculiarities of individual constitution, the obvious indications are to treat the patient rather than the disease.

The hygiene of the individual, embracing all measures calculated to build up and maintain the general health at the highest possible standard, are scarcely subordinate in importance to specific treatment.

The patient's food should be of the most nutritious character, his surroundings good, his habits regular, overwork and exposure should be avoided, while alcoholic and venereal excesses should be prohibited.

Tobacco should be absolutely interdicted during the first year of the disease, and longer if there is a tendency to localization of the disease in the mouth in the shape of successive crops of mucous patches.

The irritating influence of tobacco upon the mucous membrane of the mouth and throat, as well as its depressing influence upon the vital powers, render it especially objectionable.

The hygiene of the mouth should be further attended to by the use of astringent washes, solution of chlorate of potash, etc., which tends to prevent mercurial stomatitis when patients are under the influence of mercurial treatment.

Particular attention should be paid to the care of the skin by frequent baths and suitable clothing, in order to maintain this organ in the best possible condition for the proper performance of its functions.

Exposure to extremes of temperature or other conditions which favor "catching cold" should be particularly guarded against.

Since the effect of syphilis is to enfeeble the organism, tonics and reconstituent remedies should be used to counteract the anæmiating and debilitating influence of the diathesis.

The ferruginous tonics are often advantageously given in conjunction with specific treatment, or in its intermissions; vegetable bitters to improve the appetite, nutritive tonics, as cod-liver oil, subserve a useful purpose in toning up the system and increasing its power of resistance.

In cachectic individuals, in the subjects of malignant precocious syphilis, active specific treatment does positive harm; good food, stimulants, and all measures calculated to promote nutrition and restore the general health, should be employed.

Various remedies drawn from the vegetable kingdom, as sarsaparilla, stillingia, yellock dock, xanthoxylum, etc., have been enthusiastically recommended in the treatment of syphilis, and are held in high repute by many physicians.

Various mineral agents, as gold, rubidium, bichromate of potassium, arsenic, and iodoform have been recommended as highly efficacious, but experience has proved them of no value.

Syphilization for the cure of syphilis is mentioned only to be condemned; the practice, quite in vogue a few years ago, is now virtually obsolete.

By syphilization is understood repeated inoculation with the matter of irritated chancres, with the view of saturating the system with the syphilitic virus, and thus securing immunity from the disease.

As formulated by Langlebert, "syphilization is the art of giving syphilis to those who have it not, of redeveloping it in those who have had it, without curing those who have it."

TREATMENT OF INFANTILE SYPHILIS.

The treatment of infantile syphilis, whether hereditary or acquired, demands certain modifications of the treatment best adapted for adults. It is of the first importance that the nutrition of the child should not be impaired.

On account of its tendency to produce gastro-intestinal complications, the internal administration of mercury is, as a rule, contra-indicated; the dermic method is preferable in the majority of cases.

For this purpose inunctions with blue ointment, the oleate of mercury, the continuous application of mercurial plasters, mercurial baths, etc., may be employed.

Inunction with five to fifteen grains of blue ointment, or the oleate of mercury (five per cent), may be made over different regions of the body, preferably over the abdomen and flexor surfaces, as the fineness of the skin of these parts facilitates absorption.

Mercurial inunctions are apt to cause cutaneous irritation of various kinds and degrees of intensity, to obviate which a

new surface should be selected for each application.

The systemic as well as the local effects of mercury should be carefully watched. Anæmia, salivation, irritation of the mucous membrane of the mouth, etc., indicate a temporary remission of the treatment.

Mercurial baths, prepared by the addition of an alcoholic solution of the sublimate to the ordinary bath, with or without chloride of ammonium, is a cleanly and convenient method of employing mercury. The existence of large abraded or ulcerated surfaces would constitute a contra-indication.

Hypodermic injections, although highly recommended by many authorities, should not, as a rule, be employed in the treatment of infantile syphilis. Their tendency to produce indurations and abscesses more than counterbalance the advantage of their prompt and speedy action in suppressing symptoms.

The internal administration of mercury in the form of the gray powder, calomel, or the bichloride is sometimes well borne by young children. Tonics, such as the lactate

of perchloride of iron, should be given to counteract the anæmiating and debilitating influence of the drug.

The treatment should be essentially symptomatic. With the cessation of active symptoms the mercury should be discontinued, and in the interval between the manifestations the lactate or syrup of the iodide of iron should be given.

A continuous and prolonged mercurial treatment should not be employed in the case of young children, unless an unusual severity of the diathesis furnishes indication to the contrary.

Iodide of potassium may be given internally or in the form of baths; its influence is less positive and pronounced than in the acquired form. It is more efficacious in the late or tardy manifestations of hereditary syphilis which develop at the period of second dentition, or early adolescence, or even later.

A child with congenital syphilis should always nurse its own mother when practicable; as the mother, though healthy, is not liable to receive the contamination from her

nursing child. In infantile syphilis acquired from a non-maternal source, this precept does not apply.

CHAPTER XXIV.

SYPHILIS AND MARRIAGE.

THE relations of syphilis with marriage embrace many questions of important interest from both a medical and social standpoint

A syphilitic man exposes the woman he marries to the danger of contracting his disease; she may become infected from a contagious lesion on his person, or she may receive syphilis by conception.

Contagion in marriage is commonly effected by the medium of secondary accidents; mucous patches in the mouth, and moist erosive papules about the genitals constitute the most frequent sources of contagion.

A syphilitic man endangers not only his wife but also his offspring. Syphilis may be transmitted by the father alone, or more

certainly when the mother has been preliminarily infected.

A man with syphilis may marry, believing himself cured ; he may have contracted syphilis three or four weeks before marriage without any evidence of the disease presenting itself until after marriage; or, as is most frequently the case, he contracts the disease from an extra-conjugal source, after marriage.

When a married man has syphilis, the first indication is to prevent contamination of his wife; the second is to guard against pregnancy.

If he present himself with a chancre, excision or destructive cauterization should be at once employed to destroy as speedily as possible a source of contagion.

With the same object in view, an energetic specific treatment should be instituted in order to suppress secondary accidents, which are such a fruitful source of contagion in marriage.

The interdiction of pregnancy should be absolute until time and treatment have ex-

erted their attenuating influence upon the diathesis.

If the wife has become infected, and pregnancy take place, she should be energetically treated during the greater part of the period of her pregnancy. Specific treatment, judiciously employed, does not tend to produce abortion.

When the pregnancy results in a child, living but syphilitic, it should always be nursed by the mother, even though she may have escaped the contagion in carrying it.

A healthy mother, nursing her syphilitic child, is not liable to receive the contagion from it. It is a law of syphilis, first formulated by Colles, that a child, syphilitic from birth, never communicates the disease to its nursing mother.

The converse of this proposition is likewise true: that a healthy child, born of a syphilitic mother, never receives the maternal affection by nursing her.

If the disease be contracted by either mother or child after its birth, these propositions do not hold true. Contagion oper-

ates as actively as in other cases of acquired syphilis.

A man with syphilis should not marry until after a certain period, on the average three or four years, has elapsed since the date of his infection, during which time he should receive sufficient specific treatment.

A mild type of syphilis, conjoined with a prolonged immunity from all specific manifestations, constitute favorable conditions for shortening the duration of this period.

A malignant type of syphilis, characterized by severe and precocious manifestations, or by a tendency to localization in important central organs, as the brain, cord, etc., should be regarded as an express contra-indication of marriage.

FORMULARY

AND

SPECIAL RULES OF TREATMENT.

PART IV.

TREATMENT OF GONORRHŒA.

THE treatment of urethritis is based upon the same general principles as are indicated in the treatment of inflammation of any other mucous surface or organ of the body.

Experience has proven that attempts to cut short the inflammation are seldom successful, while the risks of the dangerous results which often attend the abortive method are such as to preclude its recommendation. The objects of treatment are to mitigate painful symptoms, to modify in-

flammatory action, and to prevent complications.

While in some cases complications are determined by peculiarities of individual constitution, and are not preventable, yet certain complications result from the neglect of ordinary precautions, or may be directly caused by the injudicious use of remedies, or the instruments employed in their application. The more serious complications of gonorrhœa, as epididymitis, cystitis, etc., develop at a late stage, and after extension of the inflammation to the deep urethra; therefore, the more prompt the cure, the less the liability to these accidents.

The intelligent adaptation of remedies to the stage of the disease and the grade of inflammatory action present, is the first condition of successful treatment. Many remedies which act admirably in one stage of the disease are without avail, or positively harmful, in another.

The enforcement of suitable hygienic measures is scarcely subordinate in importance to the use of therapeutical means. The action of the best remedies may entirely fail if hygienic precautions are neglected.

The proper management of a case of gonorrhœa comprehends, then, not only the intelligent use of therapeutical means, but also attention to hygienic measures and a variety of mechanical details, having reference to the dressing of the inflamed member, the disposal of the discharge, the proper use of the syringe, etc.

REST.—The first essential in the treatment of an inflamed organ is repose of that organ. The patient should maintain as nearly as possible absolute rest—preferably in a recumbent position. The relief of painful symptoms, and the more speedy subsidence of the inflammation, will amply compensate for the enforced confinement. Hospital patients are more quickly cured and suffer from fewer complications from this fact alone.

If this advice be found impracticable, the patient should be warned of the injurious effects of walking, dancing, riding, or active exercise of any kind attended with movement or friction of the parts. Equally important is the avoidance of all causes of sexual excitement, as the company of the opposite sex, lascivious thoughts, etc. Everything of a na e calculated to stimu-

late the functional activity, or increase the congestion of the inflamed organ, is harmful. The patient should handle the penis as little as possible. Frequent pulling or "stripping" the urethra, in order to ascertain the amount of the discharge, is a reprehensible practice.

DIET.—The diet of the patient should be strictly regulated. This will often be found difficult of accomplishment, the patient being averse to making a radical change in his mode of living, as it might give occasion to remarks, or direct suspicion to the nature of his trouble.

The diet should be simple and easily digestible—preferably of milk and farinaceous food. Highly seasoned or indigestible dishes, greasy articles of food, pickles, acid fruits, certain vegetables, as tomatoes and asparagus, condiments of all kinds should be eliminated from the dietary.

The use of strong tea or coffee, wine, beer, malt, or spiritous liquors in any shape, should be expressly interdicted. Smoking is not objectionable.

DRESSING.—Attention to certain details in the dressing of the organ is important, both on the score of cleanliness and com-

fort. The accident of a long prepuce will be found a matter of convenience in collecting the discharge. In this case the simple expedient of retracting the prepuce and placing a piece of lint or absorbent cotton over the urethral orifice, which is held in place by the prepuce when drawn forward, will be found sufficient. Where the prepuce is too short to be available in this way, a muslin bag with absorbent cotton in the bottom is the best receptacle for the discharge. The penis may be inserted in the bag, which is retained in position by a tape passed around the waist, or simply pinned to the shirt front. As an additional precaution against soiling the linen, a soft handkerchief or piece of linen may be fastened beneath the shirt front.

Patients often present themselves with an old rag wrapped several times around the penis, and tightly secured by a string or tape. This dressing is both inconvenient and cumbersome; besides, the compression interferes with the circulation, causing venous congestion and favoring the tendency to erections. Equally objectionable are the rubber bags used for the same pur-

pose; they heat the parts, prevent evaporation, and act as a sort of poultice.

A light, well-fitting suspensory bandage should always be worn from an early period; this relieves the dragging sensation often experienced in the scrotal organs, and constitutes an excellent prophylactic measure against the development of epididymitis.

THE USE OF THE SYRINGE.—The purely local character of gonorrhœal inflammation, and the ready accessibility of the inflamed surface, would suggest the great advantage to be derived from local treatment. The direct topical application of remedies to the seat of the disease, by means of injections or otherwise, undoubtedly constitutes our most valuable means of cure.

The efficacy of injections depends largely upon the thoroughness with which the curative agent is brought in contact with the diseased surface. For the fulfilment of this condition, a well-constructed syringe and a proper mode of using it are requisite.

Glass syringes are, as a rule, objectionable on account of the lack of uniformity in their calibre, and their consequent imperfect action. The best instrument for injecting the urethra is a hard-rubber syringe,

capacity of three or four drachms, with a bluntly conical or olive-shaped nozzle.

The form of the nozzle is a matter of much importance. The old fashioned, long narrow tubes, which penetrate some distance within the urethra, should never be used, as they are liable to wound the delicate mucous membrane, and thus aggravate the inflammation. The blunt conical nozzle possesses the double advantage of not wounding the urethra, while preventing the escape of the injecting fluid. The Royal Excelsior P. Syringe comes nearest fulfilling the conditions of a perfect urethral syringe.

Since the best injections often fail from a faulty use of the syringe, the patient, after securing a good instrument, should be carefully instructed in the proper method of making an injection.

After charging the syringe and inserting the nozzle within the urethra, the patient should, with the fingers of the disengaged hand, carefully compress the sides of the urethra against the nozzle, in order to prevent the escape of the injecting fluid. After the piston has been pushed home, the nozzle may be withdrawn, the fingers still com-

pressing the glans, and the injection retained from three to five minutes.

The injection is best made by the patient in a standing position, or sitting on the edge of a chair.

It is always well to have the patient urinate before each injection. The stream of urine flushes the urethral canal, cleansing it of the accumulated muco-purulent secretions, thus admitting of more perfect contact of the medicated fluid with the diseased surface.

ABORTIVE TREATMENT

Before proceeding with the consideration of the ordinary treatment of gonorrhœa, it may be well to direct attention to the "abortive method."

The object of this method is to excite, by means of a caustic injection, an artificial inflammation, subsiding within a few days, which shall substitute or take the place of the existing inflammation. It is indicated only in the early acute stage, when the discharge is scanty and the inflammatory action is presumably limited to the extreme anterior portion of the urethra.

The objections to the abortive treatment are, that it rarely succeeds, even under the most favorable conditions, and that it subjects the patient to the risk of deep-seated phlegmonous inflammation of the urethra, and other dangerous results. Exceptions may be made in its favor in rare cases where marital or other relations demand the speediest possible suppression of the discharge, at whatever risk.

Should the abortive plan of treatment be decided upon, the nitrate of silver is, by common consent, the best agent to be employed. A solution of this salt (5 to 15 grs. to the ℥ i.) may be injected and retained from two to five minutes. It produces a smarting, burning pain, which may be relieved by the application of hot water. The inflammatory reaction is usually very intense, and may be attended with some constitutional disturbance. One thorough injection is usually sufficient to develop the full therapeutical efficacy of this mode of treatment.

A modification of this method consists in using weaker injections of the nitrate of silver every three hours until the requisite degree of inflammation is developed,

convinced by the discharge being tinged with blood. If the treatment proves successful, the discharge usually ceases in from three to five days.

As said before, the abortive method is not recommended; its frequent failures and its attendant risks more than outweigh its occasional success.

ORDINARY TREATMENT.

When a patient presents himself with a recently contracted gonorrhœa, he should be given to understand that his cure depends largely upon an intelligent co-operation upon his part in obeying instructions and carrying out the details of treatment. He should be impressed with the importance of a strict regulation of his diet, habits, exercise, etc., as one of the most essential conditions of cure. It is a judicious plan to order at the outset a saline cathartic to freely open the bowels.

The first efforts of the surgeon should be directed to the mitigation of painful symptoms. The principal element in the causation of pain is the passage of acid, irritating urine over the inflamed and sensi-

tive mucous membrane. The indication of treatment is to render the urine as bland and unirritating as possible. This is best effected by the use of alkaline diuretics.

The acetate, citrate, or bicarbonate of potash are among the best agents for alkalinizing the urine. Either of the following mixtures will be found admirably adapted for this purpose, and may be continued with advantage during the acute stage:

℞ Potassæ Acetatis.....ʒ v.
Spts. Ætheris Nitrosi..... ... ...ʒ iij.
Aq. Camphoræ.....ad ℥ iv.

M. Sig. Two teaspoonfuls in water every three or four hours.

Equally efficient are the following:

℞ Potassæ Citratis..... ..ʒ i.
Spts. Limoni.... .....ʒ ss.
Syrupi.....℥ ij.
Aq.....ad ℥ vi.

M. Sig. Two teaspoonfuls in water between meals.

℞ Potassæ Bicarb.....ʒ i.
Syr. Limonis.....ʒ i.
Aq..... .....ad ℥ vi.

M. Sig. Half-ounce in water three or four times a day.

Demulcent drinks, as infusions of flaxseed and slippery elm, are of benefit in the early stage of urethral inflammation. Diluent drinks serve a useful purpose in diminishing the relative proportion of salts contained in the urine. The free use of Apollinaris, Vichy, Seltzer, or ordinary water is to be encouraged.

Another very palatable and efficient drink in this stage of the disease is Eau de Goudron (Guyot's preparation). A teaspoonful in a tumblerful of water may be taken an hour or two after eating, and before retiring at night.

An excellent expedient for relieving painful urination is have the patient immerse his penis in a vessel of hot water during the act of micturition. Hot sitz-baths, or better still, the application of water as hot as can be borne for several minutes to the under surface of the penis, and along the perineum, by means of a sponge or cloth, markedly diminish the ardor urinæ.

INJECTIONS.

The use of injections constitutes the most efficient means at our command in the

treatment of urethral inflammation. One essential condition of their successful employment is the adaptation of the strength of the injection to the intensity of the inflammation. It should not be of sufficient strength to cause prolonged smarting or pain. Beyond a slight feeling of warmth subsiding within four or five minutes, no subjective sensations should be occasioned.

At first the injections should be made several times a day, after each micturition, then gradually decreased in frequency as the discharge grows less. They should not be prematurely discontinued, as the discharge may reappear after a day or two's cessation. It is a judicious practice to continue the injections in decreased strength and frequency for several days after the discharge has ceased.

The proper time for beginning the use of injections is variously stated by different authorities—many recommending delay until the decline of acute symptoms. There seems to be no well-grounded objection to the earlier employment of injections. The value of astringents in the acute stage of conjunctivitis, and inflammations of other mucous surfaces is recognized, and there

should be no exception to their early use in urethritis.

If the inflammation be intense, attended with severe pain, a mucilaginous infusion, or a mild astringent with the addition of opium or belladonna, is to be employed.

The following combinations of calmative and sedative agents will be found to have a beneficial influence by allaying pain and discomfort:

℞ Ext. Opii.....grs. xv
Decoct. Lini.....℥ vi.
M.

℞ Ext. Belladonnæ.....grs. xv.
Decoct. Lini.....℥ vi.
M.

℞ Ext. Opii.....ʒi.
Glycerinæ.....℥ ss.
Aq. Rosæ.....ad ℥ iv.
M.

℞ Ext. Opii.....ʒi.
Liq. Plumbi subacet. dilut.....℥ i.
Aquæ.....ad ℥ iv.
M.

℞ Morphiæ Sulphatis.....grs. ij.
Zinci Sulphatis.....grs. iv
Aq. Rosæ.....℥ iv.
M.

A vast number of agents, which may be classed as good, bad, and indifferent, have been recommended as the active principles of injections. A mild solution of the acetate or sulphate of zinc (1 to 2 grs. to the ℥ i.) is probably the best injection in a majority of cases. It is true, however, that one injection may fail while another succeeds.

Whatever form of injection may be selected, it is well to give it a fair trial before resorting to another. At the same time, the use of any one agent should not be too long persisted in, as by constant habituation the urethral mucous membrane may become insusceptible to its action.

The following formulæ, collected from various reputable sources, embrace a number of astringent agents, singly and in combination, the superior efficacy of which has been demonstrated by clinical experience. The weaker solutions should be used in the early stage and the stronger in the later stage, after the decline of the more acute symptoms:

℞ Zinci Acetatis.....grs. iv. to xij.
Aquæ.....℥ iv.
M.

℞ Zinci Sulphatis..... ..grs. iv. to viij.
Aquæ ..... ℥ iv.
M.

℞ Zinci Permanganatis.....gr.ij. to iv.
Aquæ..... ..... ℥ iv.
M.

℞ Argenti Nitratis.....grs. i. to ij.
Aq. destillat..... ℥ iv.
M.

℞ Plumbi Acetatis.....gr i. to xij.
Aq. destillat..... ℥ iv.
M.

℞ Pulv. Aluminis.....grs. xij. to xx.
Aquæ..... ℥ iv.
M.

℞ Acidi Tannici.....grs. vi. to xij.
Aquæ..... ...℥ iv.
M.

℞ Acidi Boracici .....grs. xx.
Aquæ..... ℥ iv.
M.

℞ Bismuthi subnitr.....grs. x. to xxx.
Aquæ ..... ℥ iv.
M.

℞ Pulv. Hydrastis..... ʒ ss. to ʒ i.
Mucilag. Acaciæ..... ℥ iv.
M.

℞ Ext. Pinus Canadensis ..... ʒ ij. to iv.
Aquæ..... ℥ iv.
M.

A combination of two or more active agents is sometimes more efficacious than either alone.

℞ Zinci Sulphatis .....grs. viij.
Plumbi Acetatis.....grs. xij.
Aq. Rosæ..... ..... ℥ iv.
M.

℞ Acidi Tannici.....grs. xij.
Zinci Sulphatis.....grs. viij.
Aquæ..... ʒ iv.
M.

℞ Zinci Sulphatis..... .....grs. x.
Hydrastis Can ..... ʒ i.
Mucilag. Acaciæ .... ℥ ij.
Aquæ.....ad ℥ iv.
M.

℞ Zinci Sulphatis .....grs. iv.
Calaminæ.....grs. x.
Mucilaginis ..... ʒ ij.
Aq.....ad ℥ iv.
M.

A formula much employed by Ricord and still in general use at the Hospital du Midi is the following:

℞ Zinci Sulphatis ....grs, xv.
Plumbi Acetatis.....grs. xxx.
Tinct. Catechu,
Vin. Opii.....āā ʒ i.
Aq. Rosæ.....ad ℥ vi.
M.

The composition of the "Injection Brou" is said to be as follows:

℞ Zinci Sulphatis. .....grs. xv.
Plumbi Acetatis.....grs. xxx.
Fl. Ext. Krameriæ,
Tinct. Opii .....āā ʒ iij.
Aquæ.....ad ℥ vi.
M.

A prescription highly recommended by the late Dr. Maury is the following:

℞ Ext. Opii.....grs. xvi.
Plumbi Acetat .....grs. xij.
Tinct. Matico,
Tinct. Catechu .....āā ʒ i.
Glycerinæ ..... ℥ ss.
Aquæ Rosæ.... .....ad ℥ vi.
M.

Citric acid is highly recommended by Jullien as the basis of an injection, especially in the terminal stage of gonorrhœa; his formula is as follows:

℞ Acidi Citrici .....grs. xij.
Acidi Salicylici.....grs. ss.
Aquæ... ..... ℥ iv.
M.

The salicylic acid is added merely as a preservative; if the preparation be made fresh every day or two, it may be omitted.

Dr. Munnich claims remarkable results from injections with a three-per-cent solution of resorcin. The following formula may be used:

℞ Resorcin..... ʒ i.
Acidi Boracici.... .....grs. xx.
Zinci Acetatis.....grs. iv.
Aq. destillat.... ..... ℥ iv.
M.

Campana speaks highly of the following:

℞ Pulv. Iodoformi..... 20 pts.
Acidi Carbol. ..... 10 "
Glycerinæ..... 80 "
Aq. destillat.....200 "
M.

Believers in the microbian origin of gonorrhœa have used solutions of the bichloride of mercury, but with indifferent results. Weiss recommends the following, on account of its presumed anti-parasitic properties:

℞ Quiniæ Sulph..... .....grs. xv.
Glycerinæ..... ʒ vi.
Aquæ .....ad ʒ iij.
M.

Three injections per day of about one drachm each.

ISOLATING INJECTIONS.

One explanation of the frequent failure of ordinary injections is supposed to be due to the fact that the remedial agent is not maintained in sufficiently prolonged contact with the diseased surface.

It has been sought to overcome this objection by the use of injections in which the active agent is combined with an inert powder, which is deposited upon the urethral walls, and remains adherent after the escape of the liquid part of the injection. They possess an additional advantage, it is claimed, in separating the inflamed surfaces from contact. The admirable results ob-

tained in the treatment of balano-posthitis by the simple interposition of a dusting powder between the opposed surfaces, is cited in confirmation of this view.

The following combinations are recommended:

℞ Bismuthi Subnitratis ..... ʒ i.
Mucilag. Cydonii..... ℥ ss.
Aquæ..... .....ad ℥ vi.
M.

℞ Bismuthi Subcarb..... ʒ i.
Glycerinæ..... ℥ ss.
Aq. Rosæ .....ad ℥ iv.
M.

℞ Pulv. Zinci Oxidi ..... ʒ i.
Acidi Tannici ....grs. xv.
Mucilag. Acaciæ..... ℥ ss.
Aq. Rosæ..... ....ad ℥ iv.
M.

℞ Pulv. Cretæ,
Bismuthi Subnitrat.....āā ʒ i.
Mucilaginis ..... ℥ iv.
M.

One serious objection to the use of isolating injections, especially those contain-

ing chalk and bismuth, is that they are liable to form a mortar-like paste, clogging the urethra and interfering with micturition. This difficulty has been overcome by Langlebert in substituting as a vehicle an emulsion of vaseline, which keeps the particles lubricated and incapable of agglutination.

SOLUBLE MEDICATED BOUGIES.

Medicated bougies are also employed for the direct topical application of remedies to the urethra. They consist of small cylinders of cacao butter or glycerinated gelatin, in which are incorporated various active or sedative agents, which are introduced into the urethra, retained in position, and allowed to dissolve. It is claimed that a more thorough and prolonged contact of the remedy with the diseased surface is thus secured than by any other means.

The list of *bougies porte-remèdes*, as they are termed, now embraces a large number of astringents, combined or not with sedatives. Their composition may be varied to suit the necessities of the case. Sulphate of zinc, acetate of lead, extract of opium,

extract of belladonna, hydrastis, tannin, iodoform, oil of eucalyptus, or any drug indicated may form the active ingredient.

Medicated bougies find their special application in the terminal stage of gonorrhœa, when all active inflammation has subsided. They are not recommended in the early stage, as they are apt to prove irritating, provoke chordee, and other disagreeable symptoms.

"ANTI-BLENORRHAGICS."

A number of agents belonging to the class of balsams, resins, and oleoresins have received this designation from their supposed specific influence in modifying inflammation of the urethral mucous membrane. Their resinous principles are eliminated through the kidneys, and act by direct contact with the urethral walls through the urine. The drugs usually included under this title are copaiba, cubebs, oil of turpentine, oil of sandal-wood, Gurjun balsam, oil of erigeron, balsam of Peru, styrax, matico, etc. Of these, copaiba is the most generally employed, and probably the most efficacious.

They are most advantageously given in

the second stage, when the acute inflammation has somewhat subsided. Their combinations and modes of administration are numerous and varied. They may be given in mixtures, in pills, in capsules, and in powders and pastes, separately, or in combination. The most eligible form is in dragees or capsules. Copaiba, on account of its disagreeable odor and taste, so offensive to most patients, and its tendency to produce gastric disturbance, acid eructations, etc., is sometimes administered *per rectum*.

The "Lafayette mixture" is composed as follows:

℞ Copaibæ.....ʒi.
Liq. Potassæ.....ʒij.
Ext. Glycyrrhizæ.....ʒss.
Spts. Ætheris Nitrosi.....ʒi.
Syr. Acaciæ.....ʒvi.
Ol. Gaultheriæ.....gtt. xvi.

M. Sig. Two to four teaspoonfuls after each meal.

℞ Copaibæ,
Syr: Tolutani,
Syr. Acaciæ,
Aq. Cinnamomi.....āā ʒi.

M. Sig. One to two teaspoonfuls after each meal.

Keyes recommends the following formula as a substitute for Lafayette mixture, since it is easier of digestion and citrate of potash is preferable to nitre and liquor potassæ:

℞ Potassæ Citratis..... ... ʒ ij.–vi.
Bal. Copaibæ..... . ʒ iij.–vi.
Ext. Hyoscyami fl..... ʒ ss.–ij.
Syr. Acaciæ..... . ..... ℥ iss.
Aq. Menth. Pip.... .....q.s. ad ℥ iij.

M. Sig. Shake. One drachm in water.

Oleum santali may be used alone in the form of capsules or in combination with Balsam Copaiba mixture.

Cubebs, dose 10 to 60 grains, may be given in powder, in the form of a fluid extract or the oleoresin may be administered in capsules. It is sometimes combined with carbonate of iron, or with copaiba, Gurjun balsam, etc.

℞ Pulv. Cubebæ..... ʒ i.
Ferri Carb.....grs. x.
M. To be taken three times a day.

℞ Copaibæ,
Cubebs,
Bismuthi Subnit.....āā ʒ ij.
Magnesiæ.....ʒ i.
Ol. Menthæ Pip.....gtt. xx.
M. To be divided into 5 grs. pills; six or eight to be taken each day.

℞ Bal. Gurjun.,
Pulv. Cubebæ .....āā ʒ ij.
M. F. Pil. No. xl. Twelve pills each day.

The list of combinations might be extended almost indefinitely, but it will generally be found preferable to give drugs of this class in gelatin or gluten capsules. The dose of the Gurjun or wood oil and the oil of sandal wood is from 10 to 30 minims. Capsules usually contain 5 to 10 minims.

Valuable as are the antiblenorrhagics in the treatment of gonorrhœa, they are by no means equally efficacious in all cases; in many cases they do positive harm. The difference in effect would seem to depend upon individual peculiarities of constitution. If they are likely to prove of service, their good effect should be manifest in two or three weeks. A prolonged course of treatment with any of this class of agents is not

recommended, as it is liable to derange the digestive functions, impair the nutrition, and otherwise debilitate the patient—a condition most unfavorable for recovery. In such cases, the substitution of ferruginous tonics, and other agencies calculated to build up the general health, may be made with advantage.

In the treatment of chronic gonorrhœa or gleet, little benefit can be gained from internal medication; the chief reliance must be placed upon active topical treatment. Tincture of cantharides, in combination with tincture of iron, the tincture or fluid extract of gelsemium, are of decided advantage where the vesical neck is involved, and there is irritability of the bladder manifested by frequent calls to urinate, with deep-seated perineal pain

It is always a safe practice to double the strength of the injections in the chronic stage. The same class of agents already recommended may be employed by deep urethral injections. The topical application of nitrate of silver, by means of instillations in the deep urethra, by cupped sounds, or the *porte topique* of Langlebert, often give good results when ordinary injections fail. In

chronic discharges dependent on the existence of stricture, the removal of the stricture is a necessary condition of cure.

TREATMENT OF SPECIAL SYMPTOMS AND COMPLICATIONS OF GONORRHŒA.

For Chordee.

℞ Lupulin,
Saccharæ Alb.....āā 3 ij.
M. Div. in chart. No. xii.

One to be taken two or three times a day. Two in the evening; repeat the dose should erection occur.

℞ Potassii Bromidi ..... ʒ ss.
Chloral..... ʒ ij.
Syr. Auranti..... ʒ i.
Aq. . .....ad ʒ iv.

M. Dose two teaspoonfuls at night; to be repeated once or twice if necessary.

Milton recommends as superior to all other remedies spirits of camphor, dose ½ to 1 teaspoonful in water or sweetened milk, upon retiring; the dose to be repeated each time the patient is awakened by an erection. The tinct. or fluid extract of gelse-

mium, in doses of from 5 to 10 drops, is an excellent remedy for chordee. Suppositories containing opium, belladonna, and hyoscyamus, introduced just before retiring, serve to prevent this annoying symptom.

Frictions with belladonna ointment, or an ointment composed of chloral and camphor, ½ to 1 drachm each to the ounce, along the perineum and under surface of the urethral canal, have proved of service in my hands.

Injections with a two-per-cent solution of cocaine or a one to two per cent solution of chloral are highly recommended.

Soaking the penis in water as hot as can be borne, for some minutes just before retiring, is another expedient of value.

BALANITIS AND BALANO-POSTHITIS.—The treatment of these accidents, when uncomplicated with phimosis, is simple, requiring only cleanliness and the separation of the opposed surfaces. For this purpose, the following dusting powder may be used.

℞ Pulv. Zinci Ox..... .....3 i.
Pulv. Bismuthi Subnitr. . .....3 ij.
M.

The interposition of a strip of dry lint or a piece of bibulous paper between the glans and prepuce, to absorb the discharge, will serve the same purpose.

When there is much œdema of the prepuce, one of the following lotions may be used:

℞ Zinci Sulphatis.....grs. iij.
Liq. Plumbi Subacetat. dil.....ʒ i.
Aq. Rosæ.....ad ʒ iij.
M.

℞ Tannin.....ʒ i.
Glycerinæ.....ʒ i.
Aq. Rosæ .....ad ʒ iij.
M.

℞ Vin. Aromat.....ʒ ss.
Aq. Rosæ.... .....ʒ iss.
M.

If the prepuce cannot be retracted on account of the existence of congenital or inflammatory phimosis, astringent injections should be thrown up by means of Taylor's flat-nozzled syringe, after first cleansing the surfaces by injections of tepid water.

Rest in bed, with the penis elevated and supported by means of a folded towel placed

between the thighs, and the use of a lead and opium or other soothing lotion, is the best treatment for inflammatory phimosis.

PROSTATITIS AND CYSTITIS occurring in the course of gonorrhœa demand much the same general plan of treatment.

Rest in a recumbent posture is to be enjoined upon the patient. All active and stimulating medication of the urethra should be suspended. The diet should be simple, preferably of skimmed milk. The bowels should be kept open, and the urine rendered bland and unirritating by means of alkaline or mucilaginous drinks. An infusion of triticum repens is most highly recommended.

The pain may be relieved by hot sitz-baths or hot fomentations to the perineum. or the use of rectal suppositories, each containing morphia $\frac{1}{4}$ gr. and atropia $\frac{1}{60}$ gr.

Bumstead speak highly of the follewing combination in subacute cystitis and prostatitis.

℞ Potassæ Bicarb.... ..... ʒ i.
Tinct. Hyoscyami,
Fl. Ext. Kavæ Kavæ..... ....āā ʒ ss.
Aq..... ...ad ʒ viij.

M. Dose, one tablespoonful three or four times a day.

Full doses of gelsemium have an excellent effect; this remedy is especially indicated where there is tendency to retention of urine.

EPIDIDYMITIS.--In the treatment of this exceedingly painful complication, a great variety of means and methods have been employed, as continuous application of ice, application of hot fomentations or poultices, immersion in hot water, followed by cold douche, compression by strapping, by collodion, by paste of earth or clay, painting the scrotum with strong tincture of iodine, or strong solution of nitrate of silver, 15 to 40 grs. to the ounce; ointment of oleate of mercury and morphia, iodoform ointment, belladonna ointment, puncture of the tunica vaginalis, puncture of the tunica albuginea and of the testis, injection of prostatic sinus with nitrate of silver, etc., etc.

The best results are obtained by rest in bed, supporting the scrotal organs by means of a folded towel or pad, the application of a poultice of tobacco and flaxseed, equal parts, and the use of opium or the hypoder-

mic injection of morphine in sufficient doses to relieve pain.

Milton recommends a lotion as follows:

℞ Liq. Ammon. Acetatis..... .... ʒi.
Spts. Ætheris..... ..... ʒiss.
Mist. Camphoræ..... ʒiiiss.

M. Ft. lotio. To be applied by means of a single fold of linen, which is continuously wetted with the fluid.

Another lotion is as follows:

℞ Tinct. Aconiti Rad.,
Tinct. Opii.....āā ʒi.
Liq. Plumbi Subacetat.,
Aq.... .... āā ʒij.
M.

To be continuously applied by means of a piece of patent lint.

TREATMENT OF GONORRHŒA IN WOMEN.

The treatment of gonorrhœa in the female is to be conducted on the same general principles as are indicated in the treatment of masculine gonorrhœa.

The same hygienic measures, comprising regulation of the diet, habits, exercise, etc., are to be enjoined. Rest and cleanliness

are of the most essential importance. The patient should remain in bed. The enforcement of this measure is usually not difficult, as the inconvenience and pain incident to every movement will dispose her to keep quiet.

The bowels should be kept open, and alkaline diuretics given to modify the acid, irritating quality of the urine. This is important even when the urethral mucous membrane is not involved, as the contact of purulent matter with the vulva is apt to cause excoriations of the mucous membrane analogous to what occurs in balanitis, and the passage of the urine over the abraded surface is attended with a burning, scalding pain.

The external parts should be frequently bathed with a solution of bicarbonate of sodium, or Labarraque's solution largely diluted. After thorough cleansing, a piece of lint or soft linen should be interposed between the labia, and kept continually wet with the same solution.

A hot sitz-bath or a general warm bath, repeated two or three times a day, is grateful to the patient, while serving to relieve the local inflammation.

When the pain and swelling have subsided so as to permit of the easy introduction of an injecting tube, the vagina should be freely syringed with tepid or hot water every two or three hours. The addition of a small quantity of the bicarbonate or biborate of soda to the water will be found of advantage.

The method of making the injection is a matter of importance. For this purpose a fountain syringe, capacity of one-half gallon or more, should be filled with the hot water, and suspended conveniently near the bed, high enough to give a sufficient force to the current. The patient should lie upon her back, the hips elevated, with a bed-pan or rubber receptacle placed beneath the buttocks to receive the escaping fluid. The nozzle, after being oiled, should be introduced well up within the vagina, its point behind the cervix, so as to thoroughly cleanse the vaginal cul-de-sac in which the purulent secretions are apt to accumulate. After copious syringing with warm water, a mild astringent injection may bé employed with the view of modifying the inflammation, and thus diminishing the activity of the pus secretion.

The medicated fluid must be brought into thorough contact with the mucous surface; when thrown into a vagina bathed in pus it is of little or no service. A thorough cleansing of the canal, preliminary to the use of the astringent injection, is a necessary condition for its efficient action.

Injections of a greater strength are tolerated by the vaginal mucous membrane than by the male urethra. It is always a judicious plan to begin with a mild solution and gradually increase the quantity of the astringent substance until the desired strength is attained, which should never be sufficient to cause increased irritation or pain.

For the sake of convenience, the astringent substances forming the basis of the injections may be prescribed in powder, the patient dissolving a given quantity in water as required for use. The following are recommended:

Pulv. Aluminis ..... ʒ i.–iv.
Tannin.... ..... ʒ i.–ij.
Zinci Acetatis..... ʒ i.–iij.
Zinci Sulphatis..... ..... ʒ i.-ij.
Plumbi Subacetatis..... ʒ i.–iv.
Ext. Rhatany .... ʒ i.–ij.
To water one pint.

It is usually a safe practice to order a heaping teaspoonful of any of the above substances to one pint of water, the patient graduating the quantity, more or less, according to the effect produced.

A combination of two or more astringents may be employed with advantage, as alum, ʒ ij., to tannin, ʒ i., or sulphate of zinc., ʒ i., to chlorate of potash, ʒ ij.

In vaginitis, the vaginal mucous membrane is also apt to be superficially excoriated by the pus. Pieces of lint saturated with the following solution :

℞ Tannin .... ʒ i.–iss.
Glycerin..... ℥ i.
M.

Or,

℞ Bismuthi Subnitr..... ʒ i.
Glycerinæ..... ℥ i.

may be inserted in the canal and allowed to remain, or pledgets of absorbent cotton, to which a thread is attached to facilitate withdrawal, sprinkled with powdered alum, calamine, boracic acid, or iodoform may be introduced. These tampons separate the inflamed surfaces and absorb the discharge,

while the astringent powder serves to modify the inflammatory action. They should be withdrawn when soaked with the discharge, an injection used, and a fresh plug inserted. If allowed to remain too long, they may prove irritating, and aggravate the inflammation.

At a later stage, when the more acute symptoms have subsided, vaginal suppositories or pessaries in which various active agents have been incorporated may be employed. They are convenient of use, while serving to maintain the astringent in prolonged contact with the diseased surfaces.

The granular eroded spots which often remain upon portions of the vaginal mucous membrane after subsidance of the acute inflammation are most efficiently treated by strong applications of nitrate of silver (20 to 40 grs. to the ounce).

Urethritis in the female is usually of short duration, and rarely requires much active medication. The same injections as recommended for urethritis in the male may be employed. Strong injections should not be used when the bladder is empty, as disagreeable vesical symptoms might be developed.

The anti-blennorrhagics are of subsidiary importance in the treatment of gonorrhœa in women; they are indicated only where the urethral mucous membrane is the seat of inflammation.

In case of intolerance, oil of sandalwood may be substituted for balsam of copaiba, and bicarbonate of soda for potassium citrate.

TREATMENT OF CHANCROID AND ITS COMPLICATIONS.

PROPHYLAXIS. — Numerous washes and lotions have been proposed from time to time against the inoculation of chancroid. These consist of various active agents in solution, as acetic and citric acids, aromatic wine, chlorinated soda, etc., which are applied with a view of neutralizing the contagious matter at the point where it is deposited. The preventive treatment of chancroid is of doubtful efficacy. The only prophylactic measure which can be relied upon is the avoidance of exposure to every possible source of contagion.

ABORTIVE TREATMENT.—The numerous experiments which have been made in inoculating the pus of chancroid have not only rendered us familiar with its clinical history, but have also demonstrated the facility with which it may be arrested at an early stage of its development. If the contagious elements be completely destroyed by

cauterization, the virulent ulcer takes on the properties of a healthy granulating wound with a tendency to heal.

As the chancroid advances in its evolution, the virus infiltrates the tissues surrounding the base of the ulcer, or may be taken up by the lymphatics, and its complete destruction becomes more difficult, or impossible.

When a patient presents himself with a *recent* chancroid, it should be immediately destroyed. For this purpose, a variety of caustic agents have been employed, as the actual cautery, caustic potash, the carbo-sulphuric paste, the Vienna paste, Canquoin's paste, the acid nitrate of mercury, nitric, sulphuric, carbolic, chromic acids, etc., etc.

The actual cautery is probably the most energetic in its action, but the sight of the hot iron is apt to frighten the patient who naturally shrinks from contact with so formidable an appliance. "The carbo-sulphuric" paste is composed as follows:

℞ Acidi sulphurici.....3 i.
Carbo. Ligni.....q.s.
M.

The composition of the Vienna paste is:

℞ Potassæ,
Calcis caust..... .. ..āā
Alcohol.....q.s.
M.

Of Canquoin's paste:

℞ Zinci chloridi..... .....1 part.
Farinæ.....2 parts.
Alcohol.....q.s.
M.

The pain caused by these applications is usually severe and of prolonged duration, which constitutes the principal objection to their use.

On many accounts, nitric acid is preferable to any other agent for the purpose of cauterization. It is most convenient of use, while the depth and extent of its destructive action may be readily regulated by the surgeon. The best mode of its application is by means of a glass rod or a piece of soft pine-wood, as a match. After the surface of the ulcer is cleansed of its secretions, the acid should be thoroughly applied to every crevice or inequality of the ulcer and beneath its edges; repeated applications may be made at the same sitting, if neces-

sary, so as to destroy the ulcerated surface in its entire extent. The pain, which is usually quite intense at the moment of application, is not prolonged in duration; it may be lessened by the preliminary application of a five-per-cent solution of cocoaine, or the anæsthetic properties of carbolic acid may be utilized by allowing a drop of the pure acid to flow over the surface.

After the fall of the slough, if the cauterization has been sufficiently thorough, the wound rapidly granulates. Should it afterward manifest evidences of virulent action, the cauterization must be repeated. The subsequent dressings should be of lint or absorbent cotton, dry or smeared with vaseline, with an occasional resort to a mildly stimulating application should the reparative process be slow.

Destructive cauterization is not applicable to all cases of recent chancroid, for obvious reasons. It is impracticable in subpreputial chancroids when complicated with phimosis, or in other situations where they are not readily accessible, as chancroids within the meatus, or when situated directly over the urethral canal, or upon the vaginal walls, for fear of establishing fistulæ.

It is not indicated where multiple chancroids exist, all of which cannot be thoroughly destroyed. Thus to cauterize an ulcer on the preputial orifice would be worse than useless, if other chancroids existed under the prepuce which could not be reached, as the former would certainly be reinoculated.

Excision is not recommended as an abortive measure. It is not always possible to remove the entire diseased tissues, and, although the operation be conducted with all possible care and attention to antiseptic precautions, the line of incision may be inoculated.

METHODIC TREATMENT.—In cases where the abortive method is not practicable on account of the situation of the chancroid, or may not be available by reason of the advanced stage of its evolution, the objects of treatment should be to limit ulceration and promote reparative action.

Most uncomplicated chancroids do well under the influence of rest, cleanliness, and astringent applications.

The patient should avoid all movements attended with irritation or friction of the parts. Cleanliness is to be promoted by the

frequent change of the dressings which should be of lint, absorbent cotton, or bibulous paper, which readily absorb the discharge and prevent its overflow on the surrounding parts. The practice of washing the ulcer at each change of dressing is harmful. The secretion may be removed by gently pressing over the surface a piece of lint or absorbent cotton.

The use of mercury, either internally or locally by the application of ointments, is harmful; in fact, all ointments or greasy substances are irritating, and should not be used.

Astringent agents may be employed in the form of lotions or in powder: they act by modifying the inflammation, diminishing the secretion, and stimulating a healthy action. They should never be used sufficiently strong to cause pain or irritation, as the congestion thus resulting would favor the extension of the ulcerative action.

A large number of astringents have been recommended which seem to possess almost equivalent properties, as follows:

℞ Argenti Nitratis..... ʒ ss.–ʒ i.
Aq. destillat..... ℥ vi.
M.

℞ Acidi Carbolici..... ʒ ss.
Aquæ..... ℥ vi.
M.

℞ Acidi Nitrici diluti..... ʒ ss.
Aquæ..... ℥ vi.
M.

℞ Aluminis Sulphatis..... ʒ i.–ij.
Aq. Rosæ..... ℥ vi.
M.

℞ Tannin..... ℥ ss.–ʒ ℓ
Aquæ..... ℥ vi.
M.

℞ Liq. Sodæ Chlorinat..... ℥ i.
Aq. destillat .....ad ℥ vi.
M.

℞ Vini Aromatici..... ℥ ij.
Aquæ.....ad ℥ vi.
M.

℞ Tannin..... ʒ ss.
Vini Aromatici..... ℥ ij.
Aq. Rosæ.....ad ℥ vi.
M.

℞ Chloral..... ʒ i.–ij.
Aquæ..... ℥ vi.
M.

℞ Acidi Carbolici..... ℥ ss.
Chloral..... ℥ i.
Aquæ..... ℥ vi.
M.

When there is a tendency to phagedenic action, the use of Ricord's prescription of the potassio-tartrate of iron often gives excellent results.

℞ Ferri et Potassæ Tartratis..... ℥ ss.
Aquæ..... ℥ vi.
M.

Or the following:

Potassæ Permanganatis..... ℥ i.– ℥ ij.
Aquæ ... . ℥ vi.
M.

Tinct. Iodini..... ..... ℥ ij.
Potassii Iodidi.....grs. xv.
Aquæ..... ..... ℥ vi.
M.

The above preparations are best employed by saturating a piece of lint or charpie with the solution, and applying it over the sore. When the chancroid is situated upon the external integument, a piece of oiled silk may be used to prevent rapid evaporation.

The dressings should be changed as often as they become soiled with the discharge, three or four times a day, or oftener, if necessary. When the dressing is found dry and adherent, exceeding care and gentleness should be exercised in its removal, since an abrasion of the surrounding epidermis, from its rough removal, would certainly be inoculated, and the dimensions of the sore thus extended.

While astringent liquids are of time-honored value in the treatment of chancroid, undoubtedly the most efficacious agent we possess for modifying the character of the sore and promoting rapid cicatrization is *iodoform*. Its anæsthetic properties admirably adapt it for the treatment of inflamed and painful chancroids. Unfortunately, its extremely disagreeable, penetrating, and clinging odor renders it objectionable to most patients, especially in private practice. It may be applied pure, or triturated with sugar of milk, by means of a camel's-hair pencil, dusting it freely over the ulcerated surface. For private patients, it may be ordered in a glass-stoppered bottle, and conveniently applied with a small bone spatula.

Care should be taken that it does not

come in contact with the patient's fingers or clothing. Another convenient method of applying iodoform is by dissolving it in ether or benzoated collodion (ʒ ss.– ℥ i. to the ℥ i.). This is painted over the surface of the sore with a camel's-hair pencil, and, upon drying, leaves a thin coating of iodoform.

It may be used as a lotion in the following combination:

℞ Iodoformi..... ʒ ss.
Alcohol..... ʒ ij.
Glycerinæ.....ad ℥ i.
M.

Or in the form of an ointment with vaseline or ung. Aq. Rosæ ʒ ss. to the ℥ i.

Various expedients have been suggested with the view of masking the disagreeable odor of the drug, which have proven only partially successful. An admixture of iodoform with equal parts of tannin modifies the odor somewhat. The same object is attained by combining it with Balsam of Peru. Various essential oils have been used. Bumstead recommends the following:

℞ Iodoformi..... ʒ ss.
Ung. Petrolei..... ℥ i.
Ol. Menthæ Pip..... gtts. vi.

I have found that the oil of erigeron effectually disguises the odor for a time. Probably the best agent for this purpose is coumarine, the odorous principle of the Tonka bean, which should be combined with iodoform in the proportion of one-fifth its weight.

Of the newer, iodine-containing, synthetically formed drugs offered as substitutes for iodoform, aristol undoubtedly occupies first place. It is odorless and exercises a marked cicatrizant action. It may be used to dust over the surface of the ulcer after using any of the astringent washes or caustics.

Iodol, europhen, dermatol, etc., are proprietary preparations of the same nature, equally expensive, and of feebler power.

Salol is another drug recommended as a substitute for iodoform.

Salicylic acid may be used in the form of a stimulating lotion (5 to 30 grs. to the ℥ i.), or as a dusting powder, combined with sugar of milk or subnitrate of bismuth, in the proportion of one part of the acid to ten parts of the inert powder.

Pyrogallic acid is another agent which has been highly recommended in the treat-

ment of chancroid. It may be combined with bismuth (ʒ ss. to ℥ i.) and powdered over the sore or used in the form of an ointment (grs. x.–xx. to ℥ i.).

Resorcin has also been employed with good effect. It may be used in the form of a lotion (5 to 20 grs. to the ℥ i.), or combined with glycerin or vaseline, or in the ethereal solution.

The situation of chancroids and the existence of complications may require certain modifications in treatment. Chancroids of the meatus or within the urethral canal are most conveniently treated by the introduction of tents smeared with ointments, pencils of iodoform, or narrow strips of iodoform plaster rolled in such a way that the medicated surface may come in contact with the sore.

Chancroids of the frenum must be cauterized with caution; if the bridle becomes perforated at one or more points, it should be divided close to the glans, and the cut cauterized, since experience proves that chancroids involving the frenum rarely begin to heal until after its complete destruction.

Subpreputial chancroid sare usually multiple; when the prepuce cannot be retracted,

by reason of congenital or inflammatory phimosis, cleanliness, and the use of antiseptic and astringent injections constitute our only means of cure. The preputial cavity should be frequently cleansed with warm-water injections, by means of a flat-nozzled syringe, and the medicated fluid then be thrown up. A solution of nitrate of silver, chlorinated soda, or permanganate of potash, etc., may be used. If there is much pain and swelling, soaking the penis in hot water, or applying compresses constantly wet with dilute alcohol and hot water will be found of service. Should the inflammation be intense and gangrene be imminent, it is best to expose the ulcers by a free division of the prepuce. This may be accomplished by a single incision along its dorsal surface, or, preferably, by two lateral incisions.

In the treatment of chancroids of the anus and rectum which are apt to be exceedingly painful, the anæsthetic property of iodoform comes into play; it may be used in the form of an ointment or in powder.

TREATMENT OF BUBO.

The treatment of simple inflammatory bubo comprises rest, light diet, laxatives,

and topical applications with a view of promoting resolution.

Various measures have been employed with the object of aborting the bubo, as the application of ice-cold compresses, the use of resolvent ointments, compression, counter-irritants, blisters, etc. When the bubo is painful, an ointment composed as follows may be employed:

℞ Ext. Belladonnæ..... ʒ ij.
Ung. Hydrarg..... ʒ vi.

or

℞ Plumbi Iodidi. ..... ʒ i.
Potassii Iodidi..... ʒ ss.
Ext. Belladonnæ.....ʒ i.
Ext. Opii.....grs. x.
Adipis.....ad ℥ i.
M.

Keyes recommends painting the skin over the gland several times a day with the following:

℞ Tr. Aconiti Rad.,
Tr. Belladonnæ.....āā q.s.

Counter-irritation is employed by painting the inflamed surface with tinct. iodine,

or, if a stronger application is desired, with Churchill's tincture, or with a solution of nitrate of silver thirty to sixty grains to the ounce.

Compression may be effected by the use of collodion, by means of a pad, or by applying a canvas bag filled with fine shot over the inflamed gland.

Pressure may also be exerted by fastening one or two dried, flat sponges over the groin by means of a spica bandage, and then moistening the sponges, causing them to swell.

If these means fail to induce resolution of the inflamed ganglion, and suppuration occurs, the pus should be evacuated by a free incision.

The internal use of sulphide of calcium, in $\frac{1}{10}$ gr. doses every two or three hours, has been employed with good effect in aborting chancroidal buboes.

VIRULENT BUBO.—Since a distinction between simple and virulent bubo is clinically impossible before suppuration occurs and an opening is made, the treatment of both forms of bubo must be essentially the same in the formative stage.

In opening a virulent bubo, most sur-

geons recommend a free incision, plunging the point of the bistoury into the abscess, and cutting from within outward.

Various other procedures have been employed, as the Vienna paste, single or multiple punctures, etc.

The objection to the use of caustics is that they cause considerable pain, while affording no special advantages over other methods. Le Pileur aspirates the pus contained in the cavity, and then throws in an antiseptic fluid with the view of neutralizing or destroying the virulence of the secretions from the walls of the cavity. Another method is to sharpen a match or pine stick to a fine point which is dipped in pure nitric or carbolic acid, and then, by a boring motion, the skin is perforated in one or more places. It is claimed that the edges of the opening are protected from inoculation by the eschar formed by the acid. A much more convenient means of effecting the same object is to use the point of a thermo-cautery.

Whatever means may be used in opening a virulent bubo, the result is usually the same, the cavity takes on the properties of the chancroidal ulcer, and the topical applications recommended in its treatment must be employed.

TREATMENT OF SYPHILIS.

The question of the possibility of destroying the syphilitic virus at its point of entrance, and preventing infection of the general system, has already been discussed, and the conclusion arrived at that the abortive treatment, by excision or destructive cauterization of the chancre, is condemned by its clinical results (pp. 139 et seq.).

The treatment of the chancre is mainly expectant; rest, cleanliness, and a protective dressing are usually the only measures necessary. The surface may be dusted with calomel, iodoform, or oxide of zinc. Many surgeons employ the "black wash:"

℞ Hydrarg. Chlor. Mit..... ..ʒss.
Liq. Calcis ....℥iv.
M.

The bottle should be well shaken and the lotion applied by means of a piece of lint several times a day.

When the chancre is situated upon the external integument, a mild mercurial ointment may be applied, as follows:

℞ Ung. Hydrarg.,
Ung. Aq. Rosæ.....āā ʒ ij.
M.

For the voluminous indurations which sometimes remain even after cicatrization of the chancre, mercurial ointment, or the gray plaster, may be employed to hasten their involution.

The induration of the lymphatic ganglia rarely requires local treatment. Should the ganglionic tumors become large and painful from inflammatory engorgement, the use of one of the following ointments is recommended:

℞ Ext. Belladonnæ..... ʒ ss.
Emplast. de Vigo..... ℥ i.
M.

℞ Plumbi Iodidi ..... ʒ i.
Emplast. de Vigo ..... ℥ i.
M.

GENERAL TREATMENT OF SYPHILIS.

As to the proper time for beginning the general treatment of syphilis, there is a difference of opinion among authorities. Many recommend the administration of

mercury upon the first sign of induration of the sore, others counsel its delay until the appearance of secondary manifestations. The latter plan is, as a rule, the most judicious. In the first place, it is rarely possible to decide with absolute certainty the syphilitic nature of a venereal sore before the appearance of secondary symptoms, and in the second place, it is doubtful whether the use of mercury in the primary stage of syphilis materially modifies the evolution of the disease, or diminishes the severity of constitutional accidents.

The principles upon which the general treatment of syphilis is based have already been formulated (pp. 214 et seq.). The importance of hygienic and tonic measures cannot be overemphasized. As before indicated, mercury and iodide of potassium are the chief remedies employed in the treatment of syphilis. Mercury may be given in the form of metallic mercury or one of its salts; the choice of the preparation and its mode of introduction into the system are often a matter of personal preference. When one preparation of the drug disagrees with a patient, or loses its efficiency from prolonged use, another may be substituted

with advantage. The administration of mercury by the mouth, either in pill form or in solution, is the most convenient mode of introducing the drug, and the one most generally employed in the general treatment of syphilis.

Of the various preparations of mercury, my own preference is for the proto-iodide in the form of gelatin or sugar coated pills, each containing one-sixth of a grain, one or two of which may be given three times a day after eating. The quantity of the drug ingested can thus be regulated with precision, and increased or diminished according to its effect upon the disease and the tolerance of the patient's system.

If this preparation should be found objectionable on account of its tendency to produce gastro-intestinal derangement, it may be combined with opium, as in the following:

℞ Hydrarg. Iodidi Viridis.....grs. x.
Ext. Lactucarii..... grs. xlv.
Ext. Opii.....grs. xv.
Confect. Rosæ..... 3 iss.

M. Make into 60 pills, two to four pills a day.

Or,

℞ Hydrarg. Proto-iodidi,
Pulv. Opii.....āā gr. xv.
Sacchari Lactis.....3 ij.
M. Div. in pil. No. 90, 2 to 4 pills each day.

Many surgeons prefer metallic mercury in the form of blue pill to any of its salts.

An excellent formula is the following :

℞ Pil. Hydrargyri.....ʒij.
Pulv. Opii.....grs. v.
Confectionis Rosæ.....q. s.
M. Make into 20 pills, one pill every 4 hours.

Bumstead recommends the following:

℞ Pil. Hydrarg .....grs. xl.
Ferri Sulphatis Exsiccati .....grs. xx.
Ext. Opii.....grs. v.
M. Ft. pil. No. xx., one pill three or four times a day.

℞ Hydrarg. cum Creta.....grs. xl.
Quininæ Sulphatis.....grs. xx.
M. Ft. pil. No. xx., two to four pills each day.

Dupuytren's pills, of time-honored use, are composed as follows:

℞ Hydrargyri Bichloridi.. .....grs. x.
Ext. Opii.....grs. xx.
Ext. Guaiac.....grs. xl

M. Make into 60 pills. Take two to four pills each day.

If patients prefer taking medicine in the liquid form, the bichloride may be given in bitter infusions, as the compound tincture of cinchona or gentian, or in combination with tincture of iron.

℞ Hydrarg. Bichloridi.....gr. i.
Tinct. Ferri Chloridi..... ℥ ss.
Aq..... .....ad ℥ iv.
M. Dose, one teaspoonful in water three times a day.

The celebrated liquor of Van Swieten is composed as follows:

℞ Hydrarg. Bichloridi.....1 pt.
Alcohol..... ... 100 pts.
Aq..... .....900 pts.
M. Dose, one teaspoonful in water.

In resorting to "mixed treatment," the biniodide of mercury is the preparation most generally employed. It is a dangerous salt, and should never be given alone,

but always in combination with iodide of potassium.

The "syrup of the iodurettted biniodide of mercury" (*Hôpital de Paris*) is composed as follows:

℞ Hydrarg. Biniodidi.....gr. iss.
Potassii Iodidi,
Aq. destillat.....āā ʒ i.
Syr. simplicis..... ..... ℥ vi.
M. Dose, two to four teaspoonfuls.

The composition of the syrup of Gibert, another favorite prescription in the Paris hospitals, is:

℞ Hydrarg. Biniodidi .....gr. i.
Potassii Iodidi,
Aq. destillat.....āā ʒ i.
Syr. simplicis ..... ℥ v.
M. Sig. Dose, one tablespoonful.

The association of iodide of potassium is indicated whenever the syphilides show a tendency to ulceration. The quantity of the iodides may be varied accordingly, as the ulcerative action is more or less pronounced.

℞ Hydrarg. Biniodidi....gr. i.
Potassii Iodidi.....ʒ i., ij., iij., or iv.
Syr. Aurantii Cort. ...℥ ij.
Aq. destillat..... . ad ℥ vi.

M. Dose, one tablespoonful three times a day after eating.

Another standard formula is:

℞ Hydrarg. Biniodidi..... .....gr. i.
Potassii Iodidi.....ʒ ij.
Syr. Sarsaparillæ Comp.,
Aq.....āā ℥ ij.

Sig. One teaspoonful after each meal.

Keyes recommends the following as a most excellent formula:

℞ Hydrarg. Biniodidi.....gr. ss. to i.
Potassii Iodidi.....ʒ ij.
Ammonii Iodidi.....ʒ ss.
Syr. Aurantii Cort.....℥ ij.
Tr. Aurantii Cort.....ʒ i.
Aq. destillatæ ....ad ℥ iv.

M. One teaspoonful largely diluted in water after each meal.

If preferred, the iodide of potassium may be given in milk or water, between meals. It may be associated with a bitter infusion,

as compound infusion of gentian or tincture of cinchona, with a view of assisting digestion, or with syrup of ginger or bitter orange to render it more palatable.

℞ Potassii Iodidi..... ʒ ij.
Syr. Aurantii Cort..... ℥ iv.
M. Dose, one to two teaspoonfuls after eating.

℞ Potassii Iodidi..... ʒ i. to ʒ ij.
Spts. Ammoniæ Aromat .... ℥ ss.
Syr. Aurantii..... ℥ i.
Decoct. Sarsaparilla Comp.ad ℥ vi.
M. Sig., one tablespoonful three times a day.

The most convenient mode of administering the iodide of potassium is in the form of a saturated solution:

℞ Potassii Iodidi..... ℈ i.
Aq. destillat ..... ʒ vi.

M. Dose, five to twenty minims or more, according to the symptoms.

Iodine may also be given in the form of iodide of sodium or iodide of ammonia.

Zittman's decoction has always been held in high repute, especially in Germany, in the treatment of syphilis, either alone, or as

an adjuvant to mercurials. Although it contains a small amount of mercury, it undoubtedly owes its virtues to its stimulating effect upon the secretions. Its principal component is sarsaparilla, with an admixture of senna leaves, anise, fennel, licorice-root, etc. In addition to its alterative and diaphoretic effect, it acts as a laxative. The bulkiness of the dose constitutes the principal objection to its use. One-half to one pint of the milder decoction in the morning and two pints of the stronger in the evening, is usually ordered. A good effect may be obtained by giving the stronger decoction in wineglassful doses several times a day. Its administration in the tertiary stage, in conjunction with iodide of potassium, is attended with good results.

Various vegetable agents have been used with benefit in the treatment of syphilis, either as adjuvants to mercury and iodide of potassium, or as substitutes, when from idiosyncrasies or constitutional peculiarities, these drugs are not well borne by the system. The following combination, known as McDade's formula, has been highly recommended by the late Dr. Sims and others:

℞ Fl. Ext. Sarsaparillæ,
Fl. Ext. Stillingiæ Sylvat.,
Fl. Ext. Kappæ Minor.,
Fl. Ext. Phytolaccæ decand..... āā ʒ ij.
Tinct. Xanthoxyli Carolin. ..... ʒ i.
M. Take from one to four teaspoonfuls in water before meals.

Dr. Taylor recommends coca erythroxylon as especially valuable in the anæmia and cachexia of the secondary stage, in malignant precocious syphilis, and also for extensive gummatous ulcerations of the tertiary period. He is accustomed to prescribe it as follows:

℞ Fl. Ext. Erythroxylon Cocæ ..... ʒ ij.
Tinct. Cinchonæ comp.,
Tinct. Gentianæ comp. ..... āā ʒ i.
M. Dose, two teaspoonfuls in wineglass of water three times a day, an hour after meals.

Or,

℞ Fl. Ext. Erythroxylon Cocæ..... ʒ ij.
Tinct. Cinchonæ comp.,
Tinct. Gentianæ comp..... āā ʒ i.
Elixir Calisayæ ..... ʒ iv.
M. One tablespoonful in a wineglass of water, one hour after meals.

INUNCTION.—This is the oldest method of employing mercury in the treatment of syphilis, and still retains its popularity with many surgeons of the present day. When mercury cannot be given by the stomach, on account of its irritating influence upon the gastro-intestinal tract, the dermic method is the best substitute. It is also indicated in conjunction with internal treatment when iritis, or other symptoms threatening the integrity of important organs, renders it necessary to secure the speediest possible effect of mercurial action.

For the purposes of inunction, blue ointment or the oleate of mercury is generally employed. The former is probably the most efficient, although the latter is the more cleanly and elegant preparation.

In making successive inunctions, the following order in selecting different regions of the body is recommended. The first day, on the abdomen, one or both sides; the second day, on the sides of the chest; the third day, on the internal surface of the thighs; the fourth day, on the internal surface of the arms; the fifth day, on the back; the sixth day, on the buttocks; and so on. The treatment may now be intermitted for

a day or two, and, if necessary, continued again in same order. A warm bath should be taken before each inunction. The quantity of the ointment to be used at each time is from 15 grains to ʒ i. The systemic effect will depend somewhat upon the patient's susceptibility and the absorbing powers of his skin, also upon the thoroughness with which the ointment is rubbed in. The skin of many patients is so exceedingly sensitive to external irritation that the inunction method is impracticable.

Another method of introducing mercury through the skin is by smearing a flannel band or piece of chamois leather with the ointment, and wearing it next the skin, or rubbing it in the soles of the feet, every night.

Should the oleate of mercury be preferred, either the five, ten, or twenty-per-cent preparation may be used in the same manner.

In employing the inunction treatment, its effect should be carefully watched. Should symptoms of mercurial stomatitis be developed, the treatment must be discontinued.

FUMIGATIONS.—Various preparations of mercury are used in fumigations, as calomel, the sulphuret, the black oxide, etc. A

specially constructed apparatus for volatilizing the drug, with a fumigating chamber, as found in many vapor-bath establishments, may be employed, or the patient, closely enveloped in a blanket, over which is thrown a rubber garment, may sit over a cane-bottom chair, beneath which is a spirit lamp, with a tin-plate attachment upon which the calomel is placed. Underneath the chair is also placed a vessel of hot water, so that the vapor of the calomel may be mingled with steam. Fifteen grains is the quantity generally employed for each fumigation, the duration of which should be ten to twenty minutes. After this exposure to the vapor, the surface of the body will be found covered with a fine white powder of calomel, which should not be removed. As the bath is usually taken in the evening, the patient may go immediately to bed.

The cutaneous application of mercury may also be made by means of an ordinary bath to which the bichloride has been added. The duration of the bath should be from one-half to one hour. The sublimate is more effective when used in combination with chloride of sodium or sal ammoniac. The following is recommended:

℞ Hydrarg. Bichloridi..... ʒ i.–ʒ iij.
Ammonii Chloridi..... ʒ ij.–ʒ vi.
Aq. destillat..... ℥ iij.–℥ vi.
M. To be added to ordinary bath.

This mode of administering mercury finds its special application in the case of young children, especially in eruptions of a pustular character. The quantity of the drug should be carefully adapted to the age of the patient.

HYPODERMIC INJECTIONS.—The alleged advantages, with the attendant disadvantages, of the subcutaneous introduction of mercury in the treatment of syphilis have already been referred to (p. 219).

Various preparations of the soluble and insoluble salts of mercury have been employed.

SOLUBLE SALTS.—*Corrosive sublimate* in distilled water, with or without the addition of glycerin, oil of vaseline, etc., in doses from one-twentieth to one-quarter of a grain, is a favorite mode of administration.

Various modifications of the sublimate solution have been made, as follows:

℞ Hydrarg. Bichloridi. .....gr. i.
Glycerinæ,
Aq.....āā ʒ i.
M. S. Inject ten minims daily.

℞ Hydrarg. Bichloridi.....gr. x.
Acidi Tartaric.....ʒ ss.
Aq. destillat.....ʒ i.
M. S. Inject five drops.

℞ Hydrarg. Bichloridi.....gr. $\frac{1}{4}$.
Sodii Chloridi.....gr. $\frac{8}{4}$.
Aq. destillat.....ʒ i.
M. S. Inject one drachm three times a week.

Asparagin mercury in aqueous doses of one-sixth of a grain used daily.

Succinimide of mercury in aqueous solution. Dose, one-sixtieth to one-twentieth of a grain.

Oxycyanide of mercury, mercuric albuminate, mercuric peptonate, the formamide of mercury, the alaninate of mercury, the benzoate of mercury, the iodo-tannate of mercury, and the carbolate represent combinations which have been employed to counteract the caustic and irritating qualities of the drug.

It is claimed that twenty to thirty injec-

tions of the insoluble salts are sufficient in ordinary cases to effect a cure.

INSOLUBLE SALTS.—*Calomel* was first employed hypodermically by Scarenzio in 1864 in the following formula:

℞ Hydrarg. Chlorid. mitis.....gr. i.–iij.
Glycerinæ.....gtt. xv.
Aq.....gtt. xv.
S. Inject gtt. xv. every third or fourth day.

Other formulæ are as follows:

℞ Hydrarg. Chloridi mitis..... ...gr. i.
Mucilag. Acaciæ.....gtt. xx.
M.

℞ Hydrarg. Chloridi mitis,
Sodii Chloridi.....āā gr. i.
Aq. destillat.....gtt. xxx.
M.

Besnier used calomel one part to oil of vaseline twenty parts.

Metallic mercury has been employed in the proportion of five grains or more weekly.

Gray oil (*oleum cinereum*), prepared by rubbing metallic mercury with lanolin and diluting with olive oil or oil of vaseline with the view of securing minute subdivision of the metal, has been extensively employed.

Yellow oxide of mercury is the most favored preparation of the insoluble salts for hypodermic use:

℞ Hydrarg. Oxid. flav..... gr. xv.
Acaciæ.....gr. iv.
Aq. destillat..... ℥ i.
M. S. Inject one Pravaz syringeful.

Salicylate of mercury, introduced by Silva de Araujo, it is claimed, causes but slight local irritation:

℞ Hydrarg. Salicylat..... gr. iij.
Mucilag. Gum. Arab..... ♏ v.
Aq. destillat..... ℥ ij.
M. Dose, one-half to one and a half grains of the salicylate weekly.

Thymolacetate of mercury has been used as in the following formula:

℞ Hydrarg. Thymolacetat.....gr. xxijss.
Mucilag. Gum. Arab.....gr. vijss.
Aq. destillat..... ʒ v.
M. S. One Pravaz syringeful weekly.

The tannate, sulphate, black oxide, red oxide, and the protiodide of mercury, Turpeth mineral, and cinnabar have all been experimented with in the hypodermic treatment of syphilis.

The injections of the insoluble salts are employed at longer intervals than the soluble salts. Six to twelve injections at weekly intervals are deemed sufficient for a cure.

The pain and local inflammation caused by hypodermic injections constitute the principal objections to their use. On this account the least sensitive surfaces of the body, as the buttocks and infra-scapular region, should be selected in making the punctures. In cases of large scleroses and old, obstinate lesions, when it is desirable to secure a prompt and vigorous local action of mercury upon the diseased tissues, the injections may be made in the immediate vicinity of the lesions.

The proper place of hypodermatic medication among our therapeutical resources against syphilis has not been definitely determined. It is most enthusiastically recommended by some surgeons, and condemned by others. As before remarked, its disadvantages are such, that it will probbly never supersede the classical methods of employing mercury.

LOCAL TREATMENT OF SYPHILITIC LESIONS.

Experience with the dermic and hypodermic methods has shown that mercury causes the lesions of syphilis to disappear more rapidly in the immediate vicinity of its application than upon remote parts of the body. While local treatment finds its most valuable application in the later ulcerative lesions which are not readily amenable to constitutional medication, it may be sometimes employed with advantage in the early stage of syphilis.

Ordinarily, the superficial and generalized eruptions, of the erythematous and papular type, may be repressed more or less promptly by the internal use of mercury alone; yet it will be found that a more prompt and vigorous effect may be secured by its combination with local treatment.

When a papular eruption is situated upon exposed parts, as the hands and face, its speedy removal is often a matter of much concern to the patient. For the purpose of hastening its involution a number of mercurial preparations may be used, as:

℞ Hydrarg. Ammoniati.....grs. xxx.
Ung. Aq. Rosæ..... ℥ i.
M.

℞ Ung. Hydrarg. Nitratis..... 3 i.
Ung. Zinci ox..... 3 vij.
M.

℞ Ung. Hydrarg..... 3 ij.
Ung. Petrolei..... 3 vi.
M.

The ointment should be rubbed in and allowed to remain over night, care being taken not to excite excessive irritation of the skin. A more elegant preparation is an ointment of the oleate of mercury (5 to 10 per cent), or, a solution of bichloride in glycerin (3 per cent) may be used for the same purpose.

For the unsightly pigmentations upon the face and forehead, which often remain for some time after the lesions have disappeared, the following lotion will be found of benefit:

℞ Hydrarg. Bichloridi..... .....grs. iv.
Ammonii Chloridi..... .....grs. xij.
Aq. Cologniensis..... ℥ i.
Aq. destillat.....ad ℥ iv.
M.

Or,

℞ Hydrarg. Bichloridi.....grs. ij.
Glycerinæ .....℥ ss.
Spts. rectificat.....℥ ij.
Aq. Rosæ.....ad ℨ i.
M.

These lotions may be applisd by means of a piece of lint saturated with the solution. For the scaly eruptions upon the palms and soles which are almost always characterized by obstinacy to constitutional treatment, the white precipitate or blue ointment may be applied, or the following:

℞ Ung. Hydrarg.....℥ ij.
Ol. Cadini.....℥ i.
Ung. Petrolei .. ..ad ℨ i.
M.

℞ Ung. Hydrarg. Nitratis.....℥ i.
Ol. Rusci.....℥ iss.
Ung. Zinci ox .....ad ℨ i.
M.

Or,

℞ Acidi Salicylici .....℥ ss.–i.
Ol. Rusci .....℥ i.
Ung. Petrolei.....ad ℨ i.
M.

Sigmund recommends the following:

℞ Hydrarg. Bichloridi. . . . . 3 ss.
Ol. Ricini. . . . . ℥xxiij.
Collodion. . . . . 3 iij.
M.

A very excellent application for syphilitic psoriasis is the following plaster:

℞ Emplastri Hydrarg.,
Emplastri Saponis. . . . . āā ʒ ss.
M.

It is also valuable for onychia and dactylitis.

In the treatment of *moist lesions, mucous patches of the integument, and condylomata* about the scrotum, vulva, or around the anus, the parts should be frequently cleaned with a solution of bicarbonate of soda or Labarraque's solution, and dusted with calomel, iodoform, or oxide of zinc. It is well to keep the surfaces separated by interposition of dry lint or absorbent cotton.

The following is an excellent powder under the use of which syphilitic condylomata rapidly melt away.

℞ Acidi Salicylici.....grs. x.
Acidi Boracici.....grs. xxx.
Calomel.....ʒ i.
M.

Or,

℞ Plumbi Carbonatis.....ʒ i.
Pulv. Amyli or Lycopodii.... .....ʒ vij.
M.

If an ointment be preferred, the white precipitate ointment may be used, or one of the following:

℞ Hydrarg. Chlor. mit.....grs. xxx.
Pulv. Zinci ox.....ʒ i.
Ung. Aq. Rosæ..... .....ʒ i.
M.

℞ Iodoform..... .....ʒ ss.
Balsamis Peruv..... ...ʒ ij.
Ung. Petrolei.....ad ʒ i.
M.

Moist lesions may be touched with a solution of nitrate of silver (grs. v.–x. to the ʒ i.), or the following lotion may be used:

℞ Hydrarg. Bichloridi.....grs. vi.–xij.
Glycerinæ.....ʒ i.
Aq.....ad ʒ vi.
M.

For *pustulo-crustaceous and ulcerative lesions* generally, an ointment of calomel, the white precipitate, or the yellow oxide of mercury may be used. The emplastrum hydrarg., Sigmund's plaster (mercurial and soap plaster, equal parts), or the following combination will be found serviceable in resolving tubercular or gummatous tumors, or as a dressing to ulcerated surfaces:

℞ Ung. Hydrarg.,
Emplast. de Vigo.....āā ʒ ss.
M.

Many ulcerative lesions do better under the influence of iodoform. It may be used in the form of a powder, rubbed into a paste as the following:

℞ Pulv. Zinci Ox.....ʒ ij.
Pulv. Iodoformi..... .....ʒ i.
Vaseline.....ad ʒ i.
M.

It may also be used suspended in ether or collodion, by painting it over the surface.

The following ointment has been found valuable as a stimulating application to old tertiary ulcers:

℞ Iodini..... ....grs. xv.
Potassii Iodidi ..... 3 ss.
Ung. Petrolei..... ... ad ℥ i.
M.

When tertiary lesions are isolated, the continuous application of mercurial plaster, or the hypodermic injection of calomel or the bichloride in the centre of the lesions, will often cause them to disappear without resort to internal treatment.

For *mucous patches* of the mouth and throat, various astringent and caustic applications may be used. The patches may be touched with nitrate of silver (the solid stick or in solution), sulphate of copper, or acid nitrate of mercury, etc., or the affected surfaces may be painted with:

℞ Acidi Chromici .....grs. x.–xx.
Aq. destillat..... ℥ i.
M.

Or

℞ Hydrarg. Bichloridi .....grs. ij.–iv.
Spts. Rectificat..... ℥ i.
M

When the lesions are more generalized and involve the mucous membranes of the

tonsils and throat, gargles of a solution of the bichloride (grs. i. to ij. to the ℥j) or chlorate of potash (grs. x.–xv. to the ℥j) may be employed. The patient should be warned not to swallow the sublimate solution.

Affections of the nasal mucous membranes are best treated by frequently cleansing the passages with antiseptic douches, as dilute solutions of chlorinated soda, carbolic acid, biborate of soda, etc. Afterward calomel or iodoform, combined with sugar of milk or bismuth, may be thrown up by means of a powder projector. The following is a good combination:

℞ Pulv. Iodoformi,
Pulv. Camphoræ..... ..... ℥ i.
Bismuthi Subnitr..... .... ℥ ij.
M.

For Alopecia.—Washing the scalp with spiritus saponis kalinus, and the use of a mild ointment of the bichloride, or a stimulating lotion is the only treatment necessary. The tincture of cantharides may enter into the composition of the ointment, as:

℞ Hydrarg. Bichloridi.... .....grs. i.–ij.
Tinct. Cantharidis .... ℥ i.
Ung. Petrolei..... ..... ℥ i.
M.

The following is a most excellent lotion:

℞ Tinct. Cantharid..... ℥ vi.
Tinct. Nucis Vomicæ..... ℥ ss.
Glycerinæ..... ℥ ij.
Aceti destillat..... ..... ℥ ss.
Aq. Rosæ ....ad ℥ vi.
M.

For Iritis.—Instillations of a solution of atropine (2 grs. to 1 ounce of distilled water), or frictions with ung. hydrarg. and extract of belladonna over the integument of forehead, and the intensification of mercurial action by the use of inunctions or hypodermic injections.

For Painful Periosteal Swellings, Osteocopic Pains, etc.—Painting the surface with tincture of iodine, or iodized collodion, frictions with twenty-per-cent ointment of oleate of mercury, with the addition of morphine. When the joints are affected, immobilization, application of blisters, etc.

For Syphilitic Orchitis. — Suspensory

bandage to relieve weight of the testicles, frictions with oleate of mercury over the scrotum, or the parts enveloped in mercurial plaster.

TREATMENT OF HEREDITARY SYPHILIS.

The general treatment of infantile syphilis, whether congenital or acquired, is based upon the principles already laid down (pp. 229 et seq.).

The inunction method is preferable for the reasons before given. Its uncleanliness, its tendency to cause cutaneous irritation, and the inconvenience of its application lead many surgeons to administer mercury by the mouth. In some children the drug does not develop gastro-intestinal irritation. It may be given in the form of mercury with chalk, calomel, the proto-iodide, or bichloride.

Monti's favorite formula is the following:

℞ Hydrarg. Chlor. mit.....grs. ij.
Ferri Lactatis.....grs. iv.
Sacch. Alb.....ad ʒ i.

M. Div. into twelve powders. One to four of these powders to be taken daily according to the child's weight.

Mercury with chalk may be administered, as in the following:

℞ Hydrarg. cum Creta ....grs. ij.
Sacch. Albæ.....grs. xij.
M. Div. into twelve powders, one three times a day.

The bichloride may be given thus:

℞ Hydrarg. Bichloridi..... gr. ss.–i.
Syr. Simplicis..... ℥ i.
Aq.....ad ℥ vi.
M. Sig. One teaspoonful three times a day.

In conjunction with the internal use of mercury in minute doses, the inunction method may be conveniently utilized by smearing the child's flannel band with blue ointment. The movements of the child will be sufficient to cause its absorption. The region of application may be changed from the abdomen to the back on alternate days.

Syphilitic lesions are apt to assume the moist form; excoriations, erosions, and mucous patches are much more common than in adults, hence cleanliness is most important. The child should be frequently bathed, and the lesions dusted with protective powders. The following are recommended:

℞ Pulv. Zinci Ox.... .... ʒ ij.
Pulv. Bismuthi Subnitr..... ʒ i.
Pulv. Amyli..... ʒ v.
M.

℞ Pulv. Aluminis,
Pulv. Cretæ Precip.....āā ʒ i.
Pulv. Lycopodii..... ʒ vi.
M.

Fuller's earth is also a good application for excoriations behind the ears and intertrigo of the neck and thighs.

For the vegetating condylomata around the genitalia and anus, dusting with equal parts of oxide of zinc and calomel, or iodoform, constitutes the most efficient local treatment.

The administration of mercury indirectly through the mother's milk, or the milk of goats which have been subjected to mercurial inunctions, has been suggested, but has been found impracticable. Numerous experiments of this nature have been made, but always with negative results.

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